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NOVEMBER 1993

**Data Base Development and
Data Analysis for
California Indoor Exposure Studies**

Volume I and Volume II



CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY



AIR RESOURCES BOARD
Research Division

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**DATA BASE DEVELOPMENT AND DATA ANALYSIS FOR
CALIFORNIA INDOOR EXPOSURE STUDIES**

VOLUME I and VOLUME II

**Final Report
Contract No. A133-187**

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VOLUME I: DATA BASE

TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT.....	ii
LIST OF FIGURES AND TABLES.....	iii
GLOSSARY OF TERMS, ABBREVIATIONS, AND SYMBOLS.....	iv
ACKNOWLEDGEMENTS.....	v
SECTION 1 - INTRODUCTION	1
1.1 Background and Purpose	1
1.2 Overview of Data Sources	2
SECTION 2 - SUMMARY AND CONCLUSIONS.....	10
SECTION 3 - RECOMMENDATIONS.....	12
SECTION 4 - DATABASE STRUCTURE	13
4.1 Data Files	13
4.2 Record Identification	15
SECTION 5 - CONTENTS OF DATA FILES	19
5.1 Chemical Files	19
5.2 Questionnaire File	20
SECTION 6 - USE OF THE DATABASE	31
SECTION 7 - REFERENCES	34
APPENDICES	
APPENDIX I-A. STUDY QUESTIONNAIRE FOR STUDIES 1, 2, AND 3	
APPENDIX I-B. RECORD OF ACTIVITIES AND ENVIRONMENTS FOR STUDIES 1, 2, AND 3	
APPENDIX I-C. STUDY QUESTIONNAIRES FOR STUDIES 4 AND 5	
APPENDIX I-D. RECORD OF ACTIVITIES AND ENVIRONMENTS FOR STUDIES 4 AND 5	
APPENDIX I-E. STUDY QUESTIONNAIRE FOR STUDY 6	
APPENDIX I-F. RECORD OF ACTIVITIES AND ENVIRONMENTS FOR STUDY 6	
APPENDIX I-G. TIME AND ACTIVITY DIARY FOR STUDY 6	
APPENDIX I-H. DERIVATION OF QUEST.DAT VARIABLES FROM RESPONSES TO QUESTIONNAIRE ITEMS	
APPENDIX I-I. SAS PROGRAM FOR CREATING QUESTIONNAIRE DATA FILE	
APPENDIX I-J. LISTING OF LABEL FILES	

ABSTRACT

The recent Woodland, CA study, sponsored by the Air Resources Board (ARB), and the series of Total Exposure Assessment Methodology (TEAM) studies, conducted in California and sponsored by the U.S. Environmental Protection Agency and the ARB, furnish residential concentration data on a number of important volatile organic compounds (VOCs), along with concomitant information. While there are some differences in the datasets associated with these studies that hinder the direct comparison of their results, there are a number of data analyses that can be justified and that could provide insight into indoor air pollutant levels, trends, and sources. To do so requires the consolidation of data from these various studies into a unified data base organized in a manner amenable to statistical analysis. To develop such a database was the first objective of this study. The present report, Volume I, documents the structure and content of this database, which contains data from six studies (three 1984 TEAM studies, two 1987 follow-up TEAM studies, and the 1990 Woodland Study). The database contains five primary data files: a file derived from questionnaire response information, two files of outdoor-, indoor-, and personal-air VOC concentrations (one for daytime and nighttime monitoring periods, and one for a 24-hour monitoring period), a file of tap water VOC concentrations, and a file of breath-sample VOC concentrations.

The second objective of the study is to perform data analyses supported by these data and to document the results. Such analyses are described in Volume II and serve not only to provide substantive information but also to illustrate other similar analyses that could be performed by the ARB.

LIST OF FIGURES AND TABLES

	<u>Page</u>
Figure 1 Relationship of Six Studies.....	4
Table 1 Characteristics of Six Studies.....	6
Table 2 List of Chemicals Measured, By Study.....	7
Table 3 Summary of Available Chemical Data, By Compound, Study, and Media, and Percentage of Measurements That Are Quantifiable.....	8
Table 4 Listing of Data Files.....	14
Table 5 Data File Specifications.....	17
Table 6 Distribution of Participants Among LA County Studies.....	18
Table 7 Codebooks for Chemical Data Files.....	21
Table 8 Listing of CHEM.FMT.....	23
Table 9 Codebook for QUEST.DAT.....	25
Table 10 Listing of QUEST.FMT.....	30
Table 11 SAS Program for Merging Questionnaire and Chemical Data, By Study and Participant.....	33

GLOSSARY OF TERMS, ABBREVIATIONS, AND SYMBOLS

ARB	Air Resources Board
ASCII	American Standard Code for Information Interchange
EPA	United States' Environmental Protection Agency
hr	Hour
HSC	Health and Safety Code
LOD	Limit of detection
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
ng/mL	nanograms per milliliter
PSU	Primary sampling unit
QL	Quantifiable limit
RAE	Record of Activities and Environments
SAS	Statistical Analysis System
SUDAAN	Survey Data Analysis
TAD	Time Activity Diary
TEAM	Total Exposure Assessment Methodology
VOC	Volatile organic compound

ACKNOWLEDGEMENTS

The source data for the present study originated from five TEAM studies sponsored by the U.S. EPA and the ARB and from the ARB-sponsored Woodland, CA Study. The authors gratefully acknowledge the sponsors, contractor personnel, and study participants involved in those studies.

This report was submitted in fulfillment of ARB Contract A133-187, "Data Base Development and Data Analysis for California Indoor Exposure Studies," by Research Triangle Institute under the sponsorship of the California Air Resources Board. Work was completed as of November 1993.

1. INTRODUCTION

1.1 Background and Purpose

The California Health and Safety Code (HSC) Section 39660.5 requires that indoor exposures to candidate toxic air contaminants be considered during risks assessments. However, only limited data are available for this purpose. Some of the primary sources of such data -- albeit for a limited set of compounds -- are the recent Woodland, CA study, sponsored by the Air Resources Board (ARB), and the series of Total Exposure Assessment Methodology (TEAM) studies conducted in California and sponsored by the U.S. Environmental Protection Agency (EPA) and the ARB. These studies furnish residential measurements on a number of important volatile organic compounds (VOCs), along with concomitant information. While there is some degree of commonality among the various data sets emanating from these studies, there are also a number of differences. For instance, there are sometimes differences in the target populations, in the statistical sampling methodology, in the time units used for data collection, in compounds that were analyzed, in the media (indoor and outdoor air, personal exposure, breath, drinking water) covered, in the monitoring methods, and in the availability and structure of certain questionnaire items. Such differences hinder the direct comparison of results from the various studies.

Nevertheless, there are many data analyses that can be justified and that could provide insight into indoor air pollutant levels, trends, and sources. To do so requires the consolidation of data from these various studies into a unified data base organized in a manner amenable to statistical analysis. Consequently, in August 1992, the ARB contracted with Research Triangle Institute (1) to develop and document such a database, and (2) to perform selected statistical analyses that illustrate the types of analyses supported by the data. The present report, Volume I, is associated with the first of these objectives: it documents the creation, structure, and contents of the consolidated database. Volume II describes the analyses and results associated with the second objective.

1.2 Overview of Data Sources

Data from six studies are included in the database:

- (1) Los Angeles (LA) County - February-March 1984
- (2) Los Angeles County - May-June 1984
- (3) Pittsburg/Antioch - June 1984
- (4) Los Angeles County - January-February 1987
- (5) Los Angeles County - June-July 1987
- (6) Woodland - May-June 1990.

Detailed descriptions of the methods and results for these individual studies can be found in the project reports referenced in Section 7. (See Pellizzari et al., 1985, for Studies 1, 2, and 3; see Pellizzari et al., 1990, for Studies 4 and 5; see Sheldon et al., 1991, for Study 6.)

Target Populations. The target populations in the LA County and Pittsburg/Antioch studies were those people who:

- Had their primary place of residence in the study area,
- Were at least 7 years old at the time of household screening,
- Were physically and mentally capable of participating,
- Were not living in group quarters or on a military reservation,
- Were present in the study area at the time of monitoring.

The target population for Study 6 consisted of those people 12 years old or older whose permanent residence was in the Woodland corporate city limits.

Sample Designs and Participant Selection. In each study, data were obtained for a sample of households and individuals. For Studies 1, 3, and 6, three-stage probability samples were employed. First-stage sampling units consisted of census blocks or combinations of blocks. Within the selected first-stage units, clusters of housing units were selected at the second stage. A knowledgeable household member was then administered a brief screening interview concerning all household members. The third stage sampling involved selecting a stratified sample of the eligible individuals from selected households. Study 2 was also a probability-based study; it consisted of a randomly selected subset of the Study 1 participants. The Study 4 sample was a purposively selected subsample of the Study 1 houses, and houses in

Study 5 were a subset of those in Study 4. (If possible, the original participant was selected; if not, another member of the household was selected. If a different family had moved into the house, a member of that family was selected.)

The relationship of the six studies is depicted in Figure 1. The first three studies constitute a group of TEAM studies that were conducted in 1984 using the same procedures and data collection instruments. Similarly, the other two studies in LA County (Studies 4 and 5) were conducted as a group in 1987. These five studies share many common design features, while the Woodland Study, conducted later, had a more varied set of objectives than the previous five. As noted above, the four LA County studies were not independent studies in that the households/participants included in the Study 2, 4, and 5 samples were (essentially) subsamples of the Study 1 sample.

Types of Data. The collected data consisted both of VOC concentration measurements for various media and of participants' responses to questionnaires. Media samples included those from the participant's breath and the household's drinking water; however, the focus of the data collection effort in all of the studies was on various air media, including 12- or 24-hr samples from personal exposure monitors (referred to as personal air), from outdoor air samples (outside of participants' houses), and from indoor air samples. In the first five studies, the participants were monitored over two consecutive periods, referred to as overnight and daytime periods, which were each approximately 12 hours long (roughly 6 pm to 6 am, then 6 am to 6 pm); only a single, 24-hr monitoring period was used in Study 6. In Studies 1, 2, and 3, the following were collected for each participant or house: one breath sample taken from the participant at the end of the 24-hour monitoring period; two 12-hr personal air samples; two water samples (averaged for analysis); and, for a subsample of homes, two 12-hr outdoor samples. All air samples were collected using Tenax. The second group of studies (Studies 4 and 5) were expanded to include outdoor air samples for all homes (rather than just a subset); three breath samples rather than one (taken at the start of the first monitoring period, after the first 12-hr period, and after the second

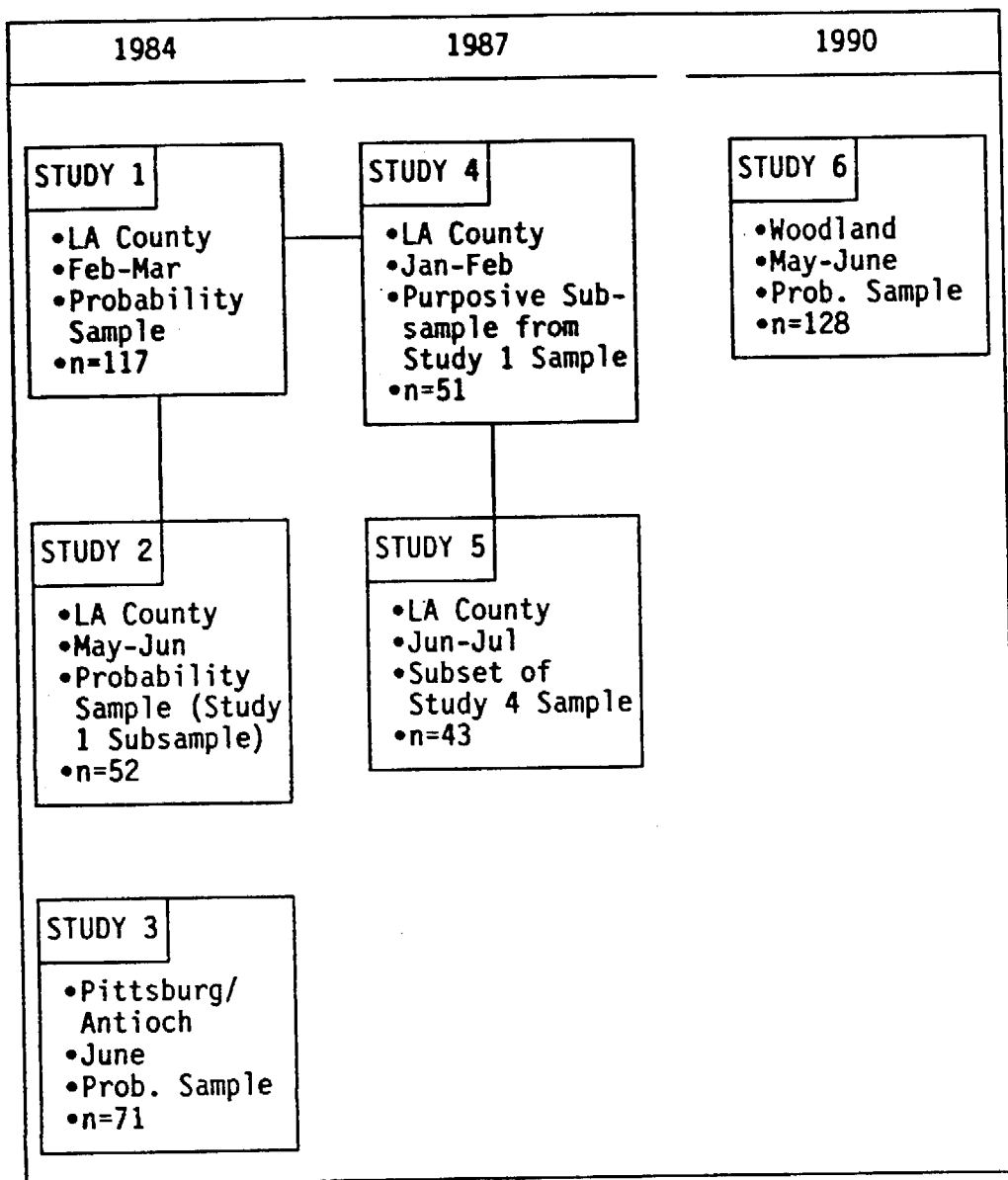


Figure 1. Relationship of Six Studies

12-hr period); and three 12-hr indoor air samples (overnight and daytime kitchen samples, and a daytime main-living-area sample). In Study 6, the 24-hr VOC samples were again collected predominantly using Tenax; however, for indoor and outdoor measurements, subsamples using canisters were used (i.e., some homes had Tenax only, some had canister only, and some had both). Table 1 summarizes the above-described characteristics of the studies.

The VOCs measured are indicated in Table 2. Whereas breath and air concentration measurements were obtained for 30 of the 33 VOCs (not the same 30), water concentrations were acquired for only 8 compounds. Note that m,p-dichlorobenzene was reported in Studies 1, 2, and 3 while m-dichlorobenzene and p-dichlorobenzene were reported separately in the later studies. Three compounds -- allyl chloride, benzyl chloride, and ethylene dibromide -- that were measured only in the Woodland Study are not included in the consolidated database. A more complete specification of the available chemical data is indicated in Table 3. The columns of this table represent the pertinent combinations of media, studies, and types of monitoring periods, while the rows list the various VOCs. Hence a tabular entry of 1, 2, 3, or 4 shows that concentration measurements on the particular compound were taken for the given media in the given study using the indicated monitoring period. (For breath, a "D" monitoring period refers to a single measurement made at the end of the daytime monitoring period, while a "B" indicates that three measurements were made -- at the start and end of the night and day monitoring periods.) The tabular entries are codes that indicate the degree to which quantifiable values were found. A code of 4, for instance, indicates that more than 75 percent of the values for that particular compound, medium, and study were quantifiable, while a 1 indicates that less than 25 percent of the concentration values were quantifiable. This table thus can be used to guide analysts in choosing those chemicals pertinent to a particular analysis (i.e., avoiding those with a large percentage of non-quantifiable values, since such values may have an undue influence on analysis results).

Participants in the studies were administered a questionnaire (referred to as the Study Questionnaire) to obtain general information about the household and the participant. At the end of each 24 hours of

TABLE 1. CHARACTERISTICS OF SIX STUDIES

Study Number	Geographic Bounds*	Temporal Bounds	Basis for Selecting Participants**	Media: No. Samples per Participant or House
1	LA County	Feb-Mar 1984	Probability Sample of Individuals Aged 7+	Breath: 1 sample at end of 24 hours Personal: 2 12-hr samples Outdoor: 2 12-hr samples (subset of houses) Water: 2 samples (averaged)
2	LA County	May-Jun 1984	Probability Sample: Study 1 Subsample	Same as Study 1
3	Pittsburg/Antioch	June 1984	Probability Sample of Individuals Aged 7+	Same as Study 1
4	LA County	Jan-Feb 1987	Purposive Sample: Study 1 Subset	Breath: 3 samples at start & at end of 12 hrs Personal: 2 12-hr samples Indoor: 2 12-hr samples in kitchen, 1 daytime sample in main living area Outdoor: 2 12-hr samples Water: 1 sample (subset of houses)
5	LA County	Jun-Jul 1987	Purposive Sample: Study 4 Subset	Same as Study 4
6	Woodland	May-June 1990	Probability Sample of Individuals Aged 12+	Personal: 1 24-hr sample Indoor: 1 24-hr sample in main living area Outdoor: 1 24-hr sample (subsample of houses)

* Location of primary residence. Group residences and military reservations are excluded.

** Participants were also required to be present at the time of monitoring and to be physically and mentally capable of participating.

TABLE 2. LIST OF CHEMICALS MEASURED, BY STUDY#

CHEMICAL	STUDY 1, 2, 3	STUDY 4, 5	STUDY 6
Chloroform	BAW	BAW	
1,2-Dichloroethane	BA	BA	
1,1,1-Trichloroethane	BAW	BAW	A
Benzene	BA	BA	A
Carbon Tetrachloride	BA	BA	A
Trichloroethylene	BAW	BAW	A
Bromodichloromethane	BW	W	
Dibromochloromethane	BW	W	
Tetrachloroethylene	BAW	BAW	A
Chlorobenzene	BAW	BAW*	A
Bromoform	BW	W	
Styrene	BA	BA	A
m-Dichlorobenzene		BA	
m,p-Dichlorobenzene	BA		
p-Dichlorobenzene		BA	A
o-Dichlorobenzene	BA	BA*	
Ethylbenzene	BA	BA	
o-Xylene	BA	BA	A
m,p-Xylene	BA	BA	A
n-Decane	BA	BA	
n-Dodecane	BA	BA	
1,4-Dioxane	BA	BA	A
1,1,1,2-Tetrachloroethane	BA		
1,2-Dibromoethane	BA	BA	
n-Octane	BA	BA	
n-Undecane	BA	BA	
1,1,2,2-Tetrachloroethane	BA	BA*	
α -Pinene	BA	BA	
Limonene		BA	
n-Nonane		BA	
Allyl Chloride**			A
Benzyl Chloride**			A
Ethylene Dibromide**			A

Tabular entries indicate media: B = breath, A = air, W = water.

* Not available in Study 4.

** Not included in the data files

TABLE 3. SUMMARY OF AVAILABLE CHEMICAL DATA, BY COMPOUND, STUDY, AND MEDIA, AND PERCENTAGE OF MEASUREMENTS THAT ARE QUANTIFIABLE.

CHEMICAL	MEDIA: STUDY: PERIOD:	BREATH					PERSONAL AIR					KITCHEN					LIVING AREA					OUTDOOR AIR						WATER				
		1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
Chloroform		D	D	D	B	B	B	B	B	B	X	B	B	B	B	X	D	D	X	D	D	X	B	B	X	X	X	X	X	X		
1,2-Dichloroethane		2	2	1	2	2	4	3	2	3	2	3	2	3	2	4	2	2	1	1	1	1	1	1	4	4	4	4	4	4		
1,1,1-Trichloroethane		1	1	1	1	1	3	1	2	3	1	3	2	3	2	2	1	1	2	1	1	1	1	1	2	1	1	1	1	3		
Benzene		4	4	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Carbon Tetrachloride		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Trichloroethylene		1	1	1	1	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Bromodichloromethane		2	2	2	1	1	4	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1		
Dibromochloromethane		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Tetrachloroethylene		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Chlorobenzene		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Bromoform		2	2	3	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Styrene		4	3	3	3	2	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
m-Dichlorobenzene		1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
p-Dichlorobenzene		4	3	3	3	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
o-Dichlorobenzene		4	3	3	3	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Ethylbenzene		3	1	2	3	2	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
o-Xylene		2	1	1	3	1	4	2	3	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
m,p-Xylene		1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
n-Decane		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
n-Dodecane		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
1,4-Dioxane		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
1,1,1,2-Tetrachloroethane		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
1,2-Dibromoethane		4	3	1	4	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
n-Octane		3	2	2	3	1	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
n-Undecane		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
1,1,2,2-Tetrachloroethane		4	4	2	4	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
α-Pinene		3	1	1	1	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Limonene		3	1	1	1	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
n-Nonane		3	1	1	1	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		

* Tabular entries are percent quantifiable codes: 1= 0 to 25%, 2= 25.1 to 50%, 3= 50.1 to 75%, and 4= 75.1 to 100% quantifiable. Where period = B or b, these codes represent averages over day and night. An asterisk indicates that the daytime percentage is much higher than nighttime percentage.
 @ period codes: D = daytime only; B = both day and night; X = 24-hr only; x = 24-hr only, for subsample of houses; b = both day and night, for subsample of es.

monitoring, a second questionnaire, the Record of Activities and Environments (RAE), was administered to acquire information on the participant's activities and associated microenvironments during the monitoring period(s). Administration of a study questionnaire was not repeated for Study 2 participants, since they had provided the data as a part of Study 1. Two versions of the Study Questionnaire were administered to Study 5 participants: a brief one, for those who had participated in Study 4; and a longer version, for those who had not participated in Study 4. Copies of the Study Questionnaires and Records of Activities and Environments for the various studies are given in Appendices I-A through I-F. For Study 6, participants completed a Time Activity Diary (TAD), as well as the Study Questionnaire and the RAE. This TAD is shown in Appendix I-G.

2. SUMMARY AND CONCLUSIONS

To conduct data analyses that might provide insight into indoor air pollutant levels, trends, and sources requires the consolidation of data from various studies into a unified data base organized in a manner amenable to statistical analysis. Consequently, in August 1992, the ARB contracted with the Research Triangle Institute to develop and document such a database and to perform selected statistical analyses that illustrate the types of analyses supported by the data. The present report, Volume I, is associated with the first of these objectives: it documents the creation, structure, and contents of the consolidated database. Volume II describes the analyses and results associated with the second objective.

Volume I provides a brief description (Section 1) of six California studies that generated residential measurements on a number of important volatile organic compounds (VOCs), along with concomitant information. Sections 4 and 5 furnish descriptions of the structure and contents of the database developed as a part of this study. The database contains information from the following six studies:

- (1) Los Angeles (LA) County - February-March 1984
- (2) Los Angeles County - May-June 1984
- (3) Pittsburg/Antioch - June 1984
- (4) Los Angeles County - January-February 1987
- (5) Los Angeles County - June-July 1987
- (6) Woodland - May-June 1990.

Information on the target populations, the sample designs and participant selection, and the relationship of the six studies is indicated in Figure 1 (Section 1). The first three studies constitute a group of TEAM (Total Exposure Assessment Methodology) studies that were conducted in 1984 using the same procedures and data collection instruments. Similarly, the other two studies in LA County (Studies 4 and 5) were conducted as a group in 1987. These five studies share many common design features, while the Woodland Study, conducted later, had a more varied set of objectives than the previous five. The four LA

County studies were not independent studies in that the households/participants included in the Study 2, 4, and 5 samples were (essentially) subsamples of the Study 1 sample.

Pertinent types of data from these studies' databases were selected for inclusion into the consolidated database. This was straightforward for most of the chemical data in that those data could be extracted directly. A great deal of effort was required, however, to develop a questionnaire data file, since different sets of questionnaires were used in the various studies, and since lengths of the monitoring periods were not completely compatible for all six studies. The consolidated database consists of five primary files, which are summarized below:

FILE NAME	DESCRIPTION OF FILE CONTENTS
QUEST.DAT	General household and personal characteristics, based on responses to Study Questionnaires (Studies 1-6); data on activities, microenvironments, and potential VOC exposures during the monitoring period, based on responses to the RAE (Studies 1-6) and to TAD (Study 6)
DAYNITE.DAT	Personal, indoor (where applicable) and outdoor air VOC concentration data from two consecutive monitoring periods (nighttime and daytime) -- for Studies 1-5
HOUR24.DAT	Personal, indoor (where applicable) and outdoor air VOC concentration data for 24-hour monitoring periods -- constructed as a weighted average of nighttime and daytime concentration levels for Studies 1-5, and obtained directly from the 24-hour monitoring for Study 6
WATER.DAT	VOC concentration data from drinking water samples -- for Studies 1 through 5
BREATH.DAT	VOC concentration data from breath samples collected at the end of the daytime monitoring period -- for Studies 1 through 5.

In addition to the five files containing basic data, the database contains 12 auxiliary files containing variable codebooks, labels, and formats that can facilitate use of the five basic files.

Study conclusions are given in Volume II.

3. RECOMMENDATIONS

Study recommendations are given in Volume II.

4. DATABASE STRUCTURE

4.1 Data Files

The database consists of 17 ASCII data files: five files containing basic data plus 12 auxiliary files containing variable codebooks, labels, and formats that can facilitate use of the five basic files. File names are shown below:

Type of Data	Basic Data File	Variable Codebooks	Variable Labels	Formats of Variable Values
Household and Participant Characteristics	QUEST.DAT	QUEST.CBK	QUEST.LBL	QUEST.FMT
VOC Concentrations in Breath	BREATH.DAT	BREATH.CBK	BREATH.LBL	CHEM.FMT
Nighttime and Daytime VOC Concentrations in Air	DAYNITE.DAT	DAYNITE.CBK	DAYNITE.LBL	CHEM.FMT
24-hr VOC Concentrations in Air	HOUR24.DAT	HOUR24.CBK	HOUR24.LBL	CHEM.FMT
VOC Concentrations in Water	WATER.DAT	WATER.CBK	WATER.LBL	CHEM.FMT

Table 4 further describes the kinds of information and purposes of these files.

Development of the QUEST.DAT file required review of all of the items in all of the Study Questionnaires, RAEs, and TADs used in the studies. Decisions were made regarding each questionnaire item as to whether its responses should be included as a variable in the data file, and, if so, whether some transformation or recoding of the responses (e.g., collapsing of categories) was needed. Also, since wordings of items were not always identical across the studies, judgments had to be made to determine if responses to similar items should be constructed as a single variable or maintained in the file as two or more separate

TABLE 4. LISTING OF DATA FILES

FILE NAME	DESCRIPTION OF FILE CONTENTS
BASIC DATA:	
QUEST.DAT	General household and personal characteristics, based on responses to Study Questionnaires (Studies 1-6); data on activities, microenvironments, and potential VOC exposures during the monitoring period, based on responses to the RAE (Studies 1-6) and to the TAD (Study 6)
DAYNITE.DAT	Personal, indoor (where applicable) and outdoor air VOC concentration data from two consecutive monitoring periods (nighttime and daytime) -- for Studies 1-5
HOURL24.DAT	Personal, indoor (where applicable) and outdoor air VOC concentration data for 24-hour monitoring periods -- constructed as a weighted average* of nighttime and daytime concentration levels for Studies 1-5, and obtained directly from the 24-hour monitoring for Study 6
WATER.DAT	VOC concentration data from drinking water samples -- for Studies 1 through 5
BREATH.DAT	VOC concentration data from breath samples collected at the end of the daytime monitoring period** -- for Studies 1 through 5.
CODEBOOKS:	
QUEST.CBK	Codebook for QUEST.DAT
DAYNITE.CBK	Codebook for DAYNITE.DAT
HOURL24.CBK	Codebook for HOURL24.DAT
WATER.CBK	Codebook for WATER.DAT
BREATH.CBK	Codebook for BREATH.DAT
LABELS:	
QUEST.LBL	File of variable labels for variables in QUEST.DAT
DAYNITE.LBL	File of variable labels for variables in DAYNITE.DAT
HOURL24.LBL	File of variable labels for variables in HOURL24.DAT
WATER.LBL	File of variable labels for variables in WATER.DAT
BREATH.LBL	File of variable labels for variables in BREATH.DAT
FORMATS:	
QUEST.FMT	File of formats for variables in QUEST.DAT
CHEM.FMT	File of formats for variables in DAYNITE.DAT, HOURL24.DAT, WATER.DAT, and BREATH.DAT

* For Study 6, 24-hr values were obtained directly; for Studies 1 through 5, they were calculated (when both the overnight and daytime concentrations were available) as weighted averages of the night and day concentrations. Actual monitoring times were available and used for Studies 4 and 5, while for Studies 1, 2, and 3, the duration of the monitoring was assumed to be 12 hours for the overnight period and 10 hours for daytime period.

** Breath samples collected at other times (Studies 4 and 5) are not included in the database.

variables. The QUEST.DAT file contains 462 records that are uniquely identified by values of two variables:

ID1: the study number (coded 1 through 6), and

ID2: the participant (and household) identifier (described later).

In addition to the ID information, the file contains coded responses to a variety of items from all of the survey instruments.

The creation of the basic data files was straightforward for the BREATH.DAT, DAYNITE.DAT, and WATER.DAT files in that the data items were identical to those originally acquired; only reformatting of the original data was needed. The basic data items were the record identification items (described below), the actual measured VOC concentrations, associated measurability indicators (e.g., indicating those concentrations falling below limits of detection), and associated sampling weights (used to compute totals or means that apply to the target populations). The sampling weights are study-specific and compound-specific. Records in these files are uniquely identified by ID1 and ID2, as above, plus CMPD, a two-digit code identifying the particular compound. Additional information regarding the data in these files can be found in prior reports, as indicated below:

Study	Reference	Information on Sampling Design and Weights	Information on Detection and Quantitation Limits
1,2,3	Pellizzari et al., 1985	Section 4	Pages 104, 196-211
4,5	Pellizzari et al., 1990	Page 4-1	Section 7
6	Sheldon et al., 1991	Sections 6, 9.2, 9.3, and Appendix C	Section 9.4

Records in the HOUR24.DAT file are also uniquely identified by ID1, ID2, and CMPD. Creating this file was similar to the other chemical files except for the following:

- For Studies 4 and 5, "24-hr" concentrations (c) were calculated as weighted averages of the daytime (c_d) and nighttime (c_n) concentrations; that is, $c = [t_d c_d + t_n c_n] / [t_d + t_n]$, where t_d and t_n denote the lengths of the daytime and nighttime monitoring periods, respectively. Actual values of t_d and t_n were available for each household (participant) and were used in the formula. A value of c was calculated only if both the day and night concentration components were present. (Note that the term "24-

hour" in reference to these files is used as a convenience; its use should not be construed to mean that an exact 24-hour period was covered. In fact, the usual length was somewhat shorter than 24 hours. This was true for all six studies.)

- For Studies 1, 2, and 3, the same type of weighted average of daytime and nighttime concentrations was used to produce the corresponding "24-hr" concentration. For these studies, however, actual values of t_d and t_n for individual participants were not available; approximate average values were thus used -- namely, $t_d = 10$ hours and $t_n = 12$ hours.
- Since a 24-hr concentration value was calculated only if both the day and night concentration components were present, the pattern of missing values for the 24-hr data is somewhat different than that for either the daytime or the nighttime data. As a result, for Studies 1, 2, and 3, it was necessary to adjust sampling weights to account for these additional missing data. These adjustments were made using the identical weighting classes and weighting class adjustment procedures that had been previously applied to the daytime and nighttime data (see Section 4 of Pellizzari et al., 1985).

Table 5 indicates the relevant file characteristics.

4.2 Record Identification

As previously indicated, a study number (ID1) and a participant identifier (ID2), along with a compound identifier in the chemical files (CMPD), identify each observation in the data files. These identifiers can be used to link the separate files of a given study. For example, a questionnaire record for a given participant can be linked to his/her chemical data, or chemical data in different files (say, breath and personal air) can be linked by participant and compound.

The participant ID can also be used to link data across the four LA County studies (Studies 1, 2, 4, and 5). This type of linkage can be done by house or by participant. However, an understanding of the structure of the participant ID is necessary. It is a seven-digit code: the first six digits uniquely identify the household (this portion of the participant ID is referred to as a household ID). The last digit identifies the person in the household. The last digit is always a "1" for Study 1, and since participants in Study 2 were a subset of those in Study 1, the last digit is always a "1" for Study 2 (i.e., in linking

TABLE 5. DATA FILE SPECIFICATIONS

FILE NAME	RECORD IDENTIFICATION*	NO. OF RECORDS	RECORD LENGTH	NO. BYTES	STUDIES INCLUDED	NO. OF COMPOUNDS INCLUDED
QUEST.DAT	ID1, ID2	462	291	135366	all	--
DAYNITE.DAT	ID1, ID2, CMPD	7726	120	942572	1-5	27
HOUR24.DAT	ID1, ID2, CMPD	8797	80	721354	all	27
WATER.DAT	ID1, ID2, CMPD	2048	30	65536	1-5	8
BREATH.DAT	ID1, ID2, CMPD	7990	30	255680	1-5	30

* Data records are sorted by values of these variables.

NOTE: All variables in the files are numeric except for monitoring date. Missing values are coded as blanks.

across Studies 1 and 2, use of the 7-digit participant ID or of the 6-digit household ID will produce identical results). However, in Study 4, the last digit can take on the following values and meanings:

- 1 -- the same participant in the same family as in Study 1 (or 2).
- 2 -- a different participant but from the same family as in Study 1 (or 2).
- 3 -- a different participant in a different family from the Study 1 (or 2) participant.

In Study 5, if the participant is the same as the Study 4 participant, then the above codes are retained for Study 5. If the Study 5 participant differed from the Study 4 participant, then one of the following two codes will appear as his/her last digit:

- 4 -- a different participant from the one monitored in both Studies 1 and 4 (but from the same family).
- 5 -- a different participant from the one monitored in Study 4 and different from the one monitored in Study 1 (but all three from the same family).

Table 6 below indicates the numbers of participants of the various types:

TABLE 6. DISTRIBUTION OF PARTICIPANTS AMONG LA COUNTY STUDIES

STUDIES IN WHICH PARTICIPANTS WERE MONITORED	STUDY: LAST DIGIT OF PART. ID:	1	2	4	4	4	5	5	5	5	5
		1	1	1	2	3	1	2	3	4	5
1 Only		42									
1 and 2 Only		24	24								
1 and 4 Only		4		1		3					
1, 2 and 4 Only		4	4	2	1	1					
1, 4 and 5 Only		19		10	4	5	9	3	5	1	1
1, 2, 4, and 5		24	24	19	4	1	17	3	1	2	1
Total No. of Participants		117	52	32	9	10	26	6	6	3	2

5. CONTENTS OF DATA FILES

5.1 Chemical Files

The chemical files BREATH.DAT, DAYNITE.DAT, HOUR24.DAT, and WATER.DAT contain data on variables of the following types:

ID Information -- used to identify records in the files: the Study Number (ID1), Participant ID (ID2), and Compound Identifier (CMPD).

Concentration Values -- expressed in $\mu\text{g}/\text{m}^3$ for air and breath samples, and in ng/mL for water samples; names begin with "C".

Measurability Indicators -- indicate if the measured concentration was quantifiable (=1) or not quantifiable (=2); names begin with the letter "M".

Sampling Weights -- used to compute estimates of population parameters such as totals or means; the weights are study- and compound-specific; names begin with "W".

Names for the concentration variables begin with "C" and the next three characters identify the location or environmental medium:

PER denotes personal air samples

KIT denotes indoor air samples from the kitchen

MLA denotes indoor air samples from the main living area

OUT denotes outdoor air samples (outside participants' homes)

BRH denotes breath samples

WAT denotes water samples.

A fifth character is sometimes used to indicate the monitoring period ("N" for nighttime and "D" for daytime).

The names for the measurability indicators associated with each concentration variable are identical to the names of the concentration variable except that they begin with "M". Similarly, names for sampling weight variables begin with "W" but are otherwise like their concentration counterparts.

A measurability indicator can take on values of 1 or 2, as indicated above; if it equals 1, the actual concentration is reported. If it equals 2, then the reported concentration is either 1/2 the limit of detection (LOD), if the measured concentration fell below the LOD, or 5/8 of the quantifiable limit (QL) if it was less than the QL but larger

than the LOD. The exception to this was Study 6, in which case the LODs and QLs were not used to censor any concentration values. Measurability indicators for the HOUR24.DAT file were set equal to 1 if either the corresponding day or night indicators was equal to 1.

Table 7 provides the codebooks for the four chemical files. The codebooks show, for each variable, the starting position in the ASCII file, the variable name, the format (SAS¹ notation), and the variable label. Table 8 provides a listing of the format file, CHEM.FMT, associated with the chemical data files. It shows the formats for the CMPD variable and for the various measurability indicators.

To ensure that the concentration data and associated measurability indicators were consistent with the source data sets, univariate statistics were generated from the database files, by study and compound. These were examined for reasonableness and were directly compared to reported statistics generated from the source data sets of the individual studies wherever possible (i.e., for BREATH.DAT, DAYNITE.DAT, and WATER.DAT). Departures from the reported statistics should not occur and no such departures were found.

5.2 Questionnaire File

The QUEST.DAT file contains data on several types of variables:

ID Information -- includes items (not derived from questionnaire responses) that are used to identify records in the file (ID1 and ID2), to identify the date of monitoring (starting day), and to convey sampling design information (stratum and primary-sampling-unit [PSU] codes, plus two types of sampling weights). Names for these variables begin with the letters "ID" followed by a integer.

Participant Information -- includes items derived from participant-supplied responses that relate to the participant's characteristics, activities, etc.

House or Household Information -- includes items derived from participant-supplied responses that relate to characteristics of the participant's house or to all members of the household.

¹SAS is the registered trademark of SAS Institute, Inc.

TABLE 7. CODEBOOKS FOR CHEMICAL DATA FILES

FILE NAME	POSITION	NAME	FORMAT	DESCRIPTION
BREATH.DAT				
	@1	ID1	1.	/*STUDY NUMBER*/
	@2	ID2	7.	/*HOUSEHOLD/PARTICIPANT ID*/
	@9	CMPD	2.	/*COMPOUND ID*/
	@11	CBRH	9.2	/*CONCENTRATION FOR BREATH*/
	@20	MBRH	1.	/*MEASURABILITY INDICATOR FOR BREATH*/
	@21	WBRH	10.4	/*SAMPLING WEIGHT FOR BREATH*/
DAYNITE.DAT				
	@1	ID1	1.	/*STUDY NUMBER*/
	@2	ID2	7.	/*HOUSEHOLD/PARTICIPANT ID*/
	@9	CMPD	2.	/*COMPOUND ID*/
	@11	CPERD	9.2	/*CONCENTRATION FOR PERSONAL AIR, DAYTIME*/
	@20	CKITD	9.2	/*CONCENTRATION FOR KITCHEN, DAYTIME*/
	@29	CMLAD	9.2	/*CONCENTRATION FOR MAIN LIVING AREA, DAYTIME*/
	@38	COUTD	9.2	/*CONCENTRATION FOR OUTDOORS, DAYTIME*/
	@47	MPERD	1.	/*MEASURABILITY INDICATOR FOR PERSONAL AIR, DAYTIME*/
	@48	MKITD	1.	/*MEASURABILITY INDICATOR FOR KITCHEN, DAYTIME*/
	@49	MMLAD	1.	/*MEASURABILITY INDICATOR FOR MAIN LIVING AREA, DAYTIME*/
	@50	MOUTD	1.	/*MEASURABILITY INDICATOR FOR OUTDOORS, DAYTIME*/
	@51	WPERD	10.4	/*SAMPLING WEIGHT FOR PERSONAL AIR, DAYTIME*/
	@61	WOUTD	10.4	/*SAMPLING WEIGHT FOR OUTDOORS, DAYTIME*/
	@71	CPERN	9.2	/*CONCENTRATION FOR PERSONAL AIR, NIGHTTIME*/
	@80	CKITN	9.2	/*CONCENTRATION FOR KITCHEN, NIGHTTIME*/
	@89	COUTN	9.2	/*CONCENTRATION FOR OUTDOORS, NIGHTTIME*/
	@98	MPERN	1.	/*MEASURABILITY INDICATOR FOR PERSONAL AIR, NIGHTTIME*/
	@99	MKITN	1.	/*MEASURABILITY INDICATOR FOR KITCHEN, NIGHTTIME*/
	@100	MOUTN	1.	/*MEASURABILITY INDICATOR FOR OUTDOORS, NIGHTTIME*/
	@101	WPERN	10.4	/*SAMPLING WEIGHT FOR PERSONAL AIR, NIGHTTIME*/
	@111	WOUTN	10.4	/*SAMPLING WEIGHT FOR OUTDOORS, NIGHTTIME*/

(continued)

TABLE 7. Continued

FILE NAME	VAR. POSITION	NAME	FORMAT	DESCRIPTION
24HOUR.DAT				
	@1	ID1	1.	/*STUDY NUMBER*/
	@2	ID2	7.	/*HOUSEHOLD/PARTICIPANT ID*/
	@9	CMPD	2.	/*COMPOUND ID*/
	@11	CPER	9.2	/*CONCENTRATION FOR PERSONAL AIR*/
	@20	CKIT	9.2	/*CONCENTRATION FOR KITCHEN*/
	@29	CMLA	9.2	/*CONCENTRATION FOR MAIN LIVING AREA*/
	@38	COUT	9.2	/*CONCENTRATION FOR OUTDOORS*/
	@47	MPER	1.	/*MEASURABILITY INDICATOR FOR PERSONAL AIR*/
	@48	MKIT	1.	/*MEASURABILITY INDICATOR FOR KITCHEN*/
	@49	MMLA	1.	/*MEASURABILITY INDICATOR FOR MAIN LIVING AREA*/
	@50	MOUT	1.	/*MEASURABILITY INDICATOR FOR OUTDOORS*/
	@51	WPER	10.4	/*SAMPLING WEIGHT FOR PERSONAL AIR*/
	@61	WMLA	10.4	/*SAMPLING WEIGHT FOR MAIN LIVING AREA*/
	@71	WOUT	10.4	/*SAMPLING WEIGHT FOR OUTDOORS*/
WATER.DAT				
	@1	ID1	1.	/*STUDY NUMBER*/
	@2	ID2	7.	/*HOUSEHOLD/PARTICIPANT ID*/
	@9	CMPD	2.	/*COMPOUND ID*/
	@11	CHAT	9.2	/*CONCENTRATION FOR WATER*/
	@20	MWAT	1.	/*MEASURABILITY INDICATOR FOR WATER*/
	@21	WWAT	10.4	/*SAMPLING WEIGHT FOR WATER*/

TABLE 8. LISTING OF CHEM.FMT

SAS FORMAT NAME	DESCRIPTION OF VARIABLE VALUES
VALUE CMPDF	2='Chloroform' 3='1,2-Dichloroethane' 4='1,1,1-Trichloroethane' 5='Benzene' 6='Carbon Tetrachloride' 7='Trichloroethylene' 8='Bromodichloromethane' 9='Dibromochloromethane' 11='Tetrachloroethylene' 12='Chlorobenzene' 13='Bromoform' 14='Styrene' 15='m-Dichlorobenzene' 16='m,p-Dichlorobenzene' 17='p-Dichlorobenzene' 18='o-Dichlorobenzene' 19='Ethylbenzene' 20='o-Xylene' 21='m,p-Xylene' 23='n-Decane' 24='n-Dodecane' 25='1,4-Dioxane' 26='1,1,1,2-Tetrachloroethane' 27='1,2-Dibromoethane' 28='n-Octane' 29='n-Undecane' 30='1,1,2,2-Tetrachloroethane' 31='a-Pinene' 32='Limonene' 33='n-Nonane';
VALUE QUANTF	1='QUANTIFIABLE' 2='BELOW THE QL';

NOTE: In some of the original studies, compound 16 represented m-dichlorobenzene, while in others it represented m,p-dichlorobenzene. To resolve this ambiguity, m-dichlorobenzene was recoded to be compound number 15, and styrene (formerly number 15) was recoded as number 14.

Table 9 provides the codebook for QUEST.DAT. It gives, for each variable, the starting position in the ASCII file, the variable name, the format (SAS notation), and the variable label. Appendix I-H indicates how the variables and their values were derived from the questionnaire items; it also indicates those questionnaire items not used in building the consolidated database. Appendix I-I provides the listing of the SAS program used to create the variables in the QUEST.DAT file.

The variables on the file are ordered by category: ID information, general characteristics (personal and house), home HVAC characteristics, home appliances, home storage of products, participant's occupations, hobbies (participants and household members), exposures to tobacco smoking, personal exposures, and microenvironments. The names of the personal and house-related variables were developed as follows: the first letter (P or H) indicates if the variable is associated with the participant (P) or the house or household (H); the second letter indicates the time frame associated with the variable, as defined below:

G = general (or unspecified) time frame, usually a week or more.

X = the 24-hr monitoring period.

N = the 12-hr nighttime (first) monitoring period.

D = the 12-hr daytime (second) monitoring period.

In general, the variable description or label must be considered in conjunction with the variable name in order to know the specific temporal unit (general, 24-hr monitoring period, or 12-hr daytime or nighttime monitoring period) and the particular spatial unit (house, household members, or participant). For example, the description "central air conditioning" for an HG variable implies that the house had a central air system, while the same description for an HX variable implies that it was used during the 24-hr period when monitoring took place. For a more complete understanding of the variables, the user should refer to Appendices I-H and I-I and the appropriate questionnaires. The variable description also indicates the measurement units (in the case of continuous variables) or the ordered set of discrete values (in the case of categorical variables). The

TABLE 9. CODEBOOK FOR QUEST.DAT

POSITION	VAR. NAME	FORMAT	DESCRIPTION	(PERTINENT STUDIES)*
@1	ID1	1.	/*Study ID */	146
@2	ID2	7.	/*Household/Participant ID */	146
@9	ID3	DATE7.	/*Monitoring Date (Start of Period) */	46
@16	ID4	7.	/*Stratum Code */	16
@23	ID5	3.	/*Primary Sampling Unit Code */	16
@26	ID6	10.4	/*Personal Sampling Weight */	16
@36	ID7	10.4	/*Household Sampling Weight */	6
@46	PG1	1.	/*Sex (Male, Female) */	146
@47	PG2	1.	/*Race (Hispanic, Native American, Non-Hispanic Black, Asian, Non-Hispanic White, Other) */	14
@48	PG3	2.	/*Age (in years) */	146
@50	PG4	3.	/*Weight (in pounds) */	14
@53	PG5	2.	/*Height (in inches) */	14
@55	PG6	1.	/*Employment Status (Employed, Housewife, Student, Unemployed, Retired, Disabled) */	146
@56	HG1	1.	/*Municipal Water Supply */	146
@57	HG2	1.	/*Home Treated for Pests */	46
@58	HG3	1.	/*Home Carpeted (All, Part, None) */	6
@59	HG4	1.	/*Carpet Cleaning in Past Year (Steam, Prof. Clean, Other, None) */	6
@60	HG5	1.	/*Comm. Clean (Drapes/Carpet/Furn.) */	4
@61	HG6	1.	/*Attached Garage */	46
@62	HG7	1.	/*Central Air Conditioning */	14
@63	HG8	1.	/*Window Air Conditioning */	14
@64	HG9	1.	/*Portable Circulation Fans */	14
@65	HG10	1.	/*Ceiling Exhaust Fan */	14
@66	HG11	1.	/*Gas Furnace */	1
@67	HG12	1.	/*Fireplace */	46
@68	HX7	1.	/*Central Air Conditioning */	46
@69	HX8	1.	/*Window Air Conditioning */	46
@70	HX9	1.	/*Circulation Fans */	46
@71	HX10	1.	/*Exhaust Fans */	46
@72	HX11	1.	/*Gas Furnace */	46
@73	HX12	1.	/*Fireplace */	46
@74	HX13	1.	/*Window Fan */	6
@75	HX14	1.	/*Bathroom/Kitchen Exhaust */	6
@76	HX15	1.	/*Doors or Windows Open */	46
@77	HX16	1.	/*Gas or Kerosene Space Heater */	46
@78	HX17	1.	/*Woodstove */	46
@79	HG18	1.	/*Gas Stove */	16
@80	HG19	1.	/*Gas Water Heater */	46
@81	HG20	1.	/*Gas Clothes Dryer */	6
@82	HG21	1.	/*Electric Oven */	1

* 1 = Studies 1,2,3; 4 = Studies 4,5; 6=Study 6.

(continued)

TABLE 9. continued

POSITION	VAR. NAME	FORMAT	DESCRIPTION	(PERTINENT STUDIES)*
083	HX22	1.	/*Gas Stove */	46
084	PX7	1.	/*Dishwasher */	46
085	PX8	1.	/*Clotheswasher */	46
086	PX9	1.	/*Gas Clothes Dryer */	46
087	HG23	1.	/*Paints/Varnishes/Thinners/Removers */	46
088	HG24	1.	/*Gasoline/Petroleum Products */	46
089	HG25	1.	/*Auto, Motorcycle, or Gas Lawnmower */	46
090	HG26	1.	/*-Cides or Garden/Lawn Chemicals */	46
091	HG27	1.	/*Cleaning Supplies */	46
092	HG28	1.	/*New Interior Furnishings */	6
093	HG29	1.	/*Room Deodorizers */	6
094	HG30	1.	/*Automotive Care Products */	6
095	PG10	1.	/*Painting */	1
096	PG11	1.	/*Dry Cleaning */	1
097	PG12	1.	/*Petroleum Plant */	1
098	PG13	1.	/*Service Station/Garage/Engine Repair */	1
099	PG14	1.	/*Furniture Repair/Refinishing */	1
0100	PG15	1.	/*Plastics Manufacture/Formulation */	1
0101	PG16	1.	/*Textile Mill */	1
0102	PG17	1.	/*Wood Processing Plant */	1
0103	PG18	1.	/*Printing */	1
0104	PG19	1.	/*Scientific Laboratory */	1
0105	PG20	1.	/*Dye Plant */	1
0106	PG21	1.	/*Hospital */	1
0107	PG22	1.	/*Metal Products */	1
0108	PG23	1.	/*Battery/Elect. Components Manufacture */	1
0109	PG24	1.	/*Refrigerator/AC Repair/Manufacture */	1
0110	PG25	1.	/*Taxi/Bus/Truck Driver */	1
0111	PG26	1.	/*Pest Control */	1
0112	PG27	1.	/*Drug Manufacture/Formulation */	1
0113	PG28	1.	/*Photo Developing */	1
0114	PG29	1.	/*Landscaping/Gardening */	1
0115	PG30	1.	/*Painting */	14
0116	PG31	1.	/*Furniture Refinishing */	14
0117	PG32	1.	/*Model Building */	14
0118	PG33	1.	/*Gardening */	14
0119	PG34	1.	/*House Plants */	4
0120	PG35	1.	/*Automobile or Bicycle Repair */	4
0121	HG31	1.	/*Painting */	146
0122	HG32	1.	/*Furniture Refinishing */	146
0123	HG33	1.	/*Model Building */	146
0124	HG34	1.	/*Gardening */	146
0125	HG35	1.	/*House Plants */	4
0126	HG36	1.	/*Automobile/Mechanical Repair */	46
0127	PG36	2.	/*Smoking Status (Current Smoker, Former Smoker, Never Smoked) */	14

* 1 = Studies 1,2,3; 4 = Studies 4,5; 6=Study 6.

(continued)

TABLE 9. continued

POSITION	VAR. NAME	FORMAT	DESCRIPTION	(PERTINENT STUDIES)*
@129	PG37	1.	/*Avg. No. Cigarettes/Day (<10, 10-30, >30) */	14
@130	HG37	1.	/*HH Members Smoke Cigarettes (Participant Only, Others Only, Both, Neither) */	14
@131	PG38	1.	/*Avg. Hrs/Day Enclosed w/Smoker-Home (0, 1-5, 6-10, >10) */	1
@132	PG39	1.	/*Avg. Hrs/Day Enclosed w/Smoker-Work (0, 1-5, 6-10, >10) */	1
@133	HX38	3.	/*No. Cigarettes Smoked in House */	6
@136	HX39	3.	/*No. Cigarettes, Cigars, or Pipefuls */	6
@139	HG40	1.	/*Tobacco Prod. Smoked in House */	146
@140	PX40	3.	/*No. Cigarettes Smoked */	46
@143	PD40	3.	/*No. Cigarettes Smoked - Daytime */	4
@146	PN40	3.	/*No. Cigarettes Smoked - Nighttime */	4
@149	PX41	1.	/*Smoked Tobacco Products */	146
@150	PD41	1.	/*Smoked Tobacco Products - Day */	14
@151	PN41	1.	/*Smoked Tobacco Products - Night */	14
@152	PX42	1.	/*Enclosed Area w/Smoker(s) */	146
@153	PD42	1.	/*Enclosed Area w/Smokers - Day */	1
@154	PN42	1.	/*Enclosed Area w/Smokers - Night */	1
@155	PX43	6.2	/*% Time Indoors at Home with Smokers */	6
@161	PX44	6.2	/*% Time Indoors Not at Home w/ Smokers */	6
@167	PX45	6.2	/*% Time Enclosed in Transit w/ Smokers */	6
@173	HG41	1.	/*Pesticides in Home */	46
@174	HG42	1.	/*Drycleaned Clothes in Home */	46
@175	HG43	1.	/*Mothballs/Crystals, Fresh/Deodorizers */	4
@176	HX44	1.	/*Shower/Bath */	46
@177	PG46	1.	/*Work with -cides */	14
@178	PX47	1.	/*Insecticides, Pesticides, Herbicides */	146
@179	PX48	1.	/*Gas Stat/Park Garage/Car Repair Shop */	6
@180	PX49	1.	/*Pumped Gas */	146
@181	PD49	1.	/*Pumped Gas - daytime */	14
@182	PN49	1.	/*Pumped Gas - nighttime */	14
@183	PX50	1.	/*Drycleaning */	1
@184	PD50	1.	/*Drycleaning - daytime */	1
@185	PN50	1.	/*Drycleaning - nighttime */	1
@186	PX51	1.	/*Wear Drycleaned Clothes */	46
@187	PX52	1.	/*Paints/Solvents */	146
@188	PX53	1.	/*Odorous Chemicals (Incl. Mothballs) */	1
@189	PX54	1.	/*Mothballs/Crystals, Fresh/Deodorizers */	46
@190	PX55	1.	/*Odorous, vaporizing glues/adhesives */	46
@191	PX56	1.	/*Toxic or Hazardous Chemicals */	1
@192	PX57	1.	/*Auto/Truck Exhaust */	146
@193	PX58	1.	/*Cleaning Solutions */	146
@194	PX59	1.	/*Degreasing Compounds */	1
@195	PG52	1.	/*Solvents */	1
@196	PG53	1.	/*Odorous Chemicals (Incl. Mothballs) */	1
@197	PG56	1.	/*Toxic or Hazardous Chemicals */	1

* 1 = Studies 1,2,3; 4 = Studies 4,5; 6=Study 6.

(continued)

TABLE 9. continued

POSITION	VAR. NAME	FORMAT	DESCRIPTION	(PERTINENT STUDIES)*
@198	PG57	1.	/*Auto/Truck Exhaust */	1
@199	PG58	1.	/*Cleaning Solutions */	1
@200	PG59	1.	/*Degreasing Compounds */	1
@201	PX60	1.	/*Flea Collars, Powder, Pet Shampoo */	46
@202	PX61	1.	/*Aerosol Personal Care Products */	46
@203	PX62	1.	/*Polishing/Waxing Agents */	46
@204	PX63	1.	/*Shower/Bath */	46
@205	PG64	1.	/*Drink Municipal Water */	14
@206	PG65	1.	/*Drink Bottled Water */	46
@207	PX66	1.	/*Worked at Regular occupation (Yes, No, Unemployed)*/	46
@208	PG67	6.2	/*Av % Day Away from Home-Weekday */	1
@214	PG68	6.2	/*Av % Day Outdoors-Weekday */	1
@220	PG69	6.2	/*Av % Day In Motor Vehicle-Weekday */	1
@226	PG70	6.2	/*Av % Day Away from Home-Weekend Day */	1
@232	PG71	6.2	/*Av % Day Outdoors-Weekend Day */	1
@238	PG72	6.2	/*Av % Day In Motor Vehicle-Weekend Day */	1
@244	PX73	6.2	/*% Mon.Period Indoors at Home */	46
@250	PX74	6.2	/*% Mon.Period Indoors at Work (not home) */	46
@256	PX75	6.2	/*% Mon.Period Indoors Not Work or Home */	46
@262	PX76	6.2	/*% Mon.Period Outdoors at Work */	46
@268	PX77	6.2	/*% Mon.Period Outdoors Not at Work */	46
@274	PX78	6.2	/*% Mon.Period Indoors Not at Home */	46
@280	PX79	6.2	/*% Mon.Period Outdoors */	6
@286	PX80	6.2	/*% Mon.Period Enclosed in Transit */	6

* 1 = Studies 1,2,3; 4 = Studies 4,5; 6=Study 6.

latter are all coded as 1, 2, ..., k. This coding facilitates use of the SUDAAN software.² SAS formats are provided to link these numeric codes to their respective meanings. These are given in Table 10, which provides a listing of the format file, QUEST.FMT, associated with the QUEST.DAT file. Most of the variables have only two values (1 for "yes", and 2 for "no") and can be associated with the "YESNOF" format; formats for the other discrete variables are specific to those variables and are thus identified by adding an "F" to the end of variable name (e.g., PG1 is the variable name for the participant's sex, and PG1F is the SAS format name).

²SUDAAN (SURvey DATA ANalysis) software is an RTI product for performing statistical tabulations and analyses on data generated from complex sample surveys. For instance, it can be used to estimate population means or proportions and their associated standard errors.

TABLE 10. LISTING OF QUEST.FMT

VALUE YESNOF 1='YES' 2='NO';
 VALUE PG1F 1='Male' 2='Female';
 VALUE PG2F 1='Hispanic' 2='Native American' 3='Non-Hispanic Black'
 4='Asian' 5='Non-Hispanic White' 6='Other';
 VALUE PG6F 1='Employed' 2='Housewife' 3='Student' 4='Unemployed'
 5='Retired' 6='Disabled';
 VALUE HG3F 1='All' 2='Part' 3='None';
 VALUE HG4F 1='Steam' 2='Prof. Dry Clean' 3='Other' 4='None';
 VALUE PG36F 1='Current Smoker' 2='Former Smoker' 3='Never Smoked';
 VALUE PG37F 1='<10' 2='10-30' 3='>30';
 VALUE HG37F 1='Participant Only' 2='Others Only' 3='Both' 4='Neither';
 VALUE PG38F 1='0' 2='1-5' 3='6-10' 4='>10';
 VALUE PG39F 1='0' 2='1-5' 3='6-10' 4='>10';
 VALUE PX66F 1='Yes' 2='No' 3='Unemployed';

6. USE OF THE DATABASE

The database is structured to allow many types of analyses to be carried out with very little programming effort. For instance, to conduct most analyses using SAS, the user will simply need to access the SAS program editor and include the pertinent portions of the format, codebook, and label files in his/her program. For most analyses, restructuring of the files and renaming of the variables will be unnecessary. Such a case is illustrated in Table 11, which outlines how one could write a SAS program for merging a chemical file with the questionnaire data.

At least two types of analyses will require restructuring of the files and renaming of variables. One type is those analyses that simultaneously treat more than one compound (e.g., inter-compound correlation analyses, principal component analyses, and factor analyses). A second type is inter-study analyses that link participants or households temporally (e.g., for examining trends between two or more of the LA County studies).

The user is cautioned that certain SAS and SUDAAN analyses require the data records to be sorted in a prescribed order. For applying SUDAAN to data from one of the probability-based studies (Studies 1, 2, 3, or 6), the records for that study should be sorted by ID4 (Stratum) and ID5 (PSU). Since SUDAAN procedures do not utilize a statement such as the SAS "BY" statement, computation of weighted statistics for multiple compounds and/or studies will necessitate either restructuring of the files, as mentioned above, or creating separate files for each compound and study and applying the procedure to each.

Users should take special note of the differences in target populations and sample designs used in the studies and use weighted or unweighted analyses as appropriate. For weighted analyses, SUDAAN should be used if standard errors of parameter estimates are desired, since SUDAAN takes account of the structure of the sampling design in calculating such standard errors. The design type specification required by SUDAAN procedures can be given as "DESIGN=WR" (i.e., to

indicate with-replacement sampling of PSUs within strata) and the required NEST statement should take the form "NEST ID4 ID5" (i.e., to indicate that primary sampling units are nested within strata).

Users should also be especially careful in generating statistical results in which data from more than one study are combined. While some exploratory models that utilize data from multiple studies may be warranted (e.g., models relating concentrations to VOC sources), the reporting of results should generally be made on a study-specific basis. The main exception to this recommendation is the LA County temporal trends analysis mentioned above in which households/participants are matched across studies.

TABLE 11. SAS PROGRAM FOR MERGING QUESTIONNAIRE AND
CHEMICAL DATA, BY STUDY AND PARTICIPANT

```
FILENAME IN1 'B:QUEST.DAT';
FILENAME IN2 'B:HOURL24.DAT';
```

```
PROC FORMAT;
    (selected records from QUEST.FMT)
    (selected records from CHEM.FMT)
```

```
DATA SASQUEST;
    INFILE IN1 LRECL=291;
    INPUT
        (selected records from QUEST.CBK)
    ;
        (selected records from QUEST.LBL)
    ;
        (SAS statements for selecting records in QUEST.DAT)
        (other SAS programming statements)
```

```
DATA SASCHEM;
    INFILE IN2;
    INPUT
        (selected records from HOURL24.CBK)
    ;
        (selected records from HOURL24.LBL)
    ;
        (SAS statements for selecting records in HOURL24.DAT)

        (other SAS programming statements)
```

[Note: Original QUEST.DAT and HOURL24.DAT files are already
sorted in the proper order for merging. If files are not
properly sorted, then use:

```
PROC SORT DATA=SASQUEST; BY ID1 ID2;
PROC SORT DATA=SASCHEM; BY ID1 ID2 CMPD;]
```

```
DATA COMBINED; MERGE SASQUEST SASCHEM(IN=INC); BY ID1 ID2;
IF INC;
```

```
    (other SAS programming statements)
```

```
    (other SAS PROC statements, as needed, to perform data
    analysis)
```

NOTE: Use of SAS formats and/or labels is optional.

7. REFERENCES

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12. Wallace, L.A., Pellizzari, E.D., Hartwell, T.D., Whitmore, R., Perritt, R. and Sheldon, L. (1988). The California TEAM study: breath concentrations and personal exposures to 26 volatile compounds in air and drinking water of 188 residents of Los Angeles, Antioch, and Pittsburg, CA. Atmos. Environ. 22, 2141-63.

APPENDIX I-A

STUDY QUESTIONNAIRE FOR STUDIES 1, 2, AND 3

**STUDY ON TOXIC CHEMICALS IN
ENVIRONMENTAL AND HUMAN SAMPLES**

Conducted by:
Research Triangle Institute
P.O. Box 12194
Research Triangle Park, North Carolina 27709

QUESTIONNAIRE

THE RESEARCH TRIANGLE INSTITUTE OF RESEARCH TRIANGLE PARK, NORTH CAROLINA, IS UNDERTAKING A RESEARCH STUDY FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY TO ASSESS LEVELS AND RELATIONSHIPS OF SELECTED TOXIC COMPOUNDS IN MAN AND ENVIRONMENTAL MEDIA. THE INFORMATION RECORDED IN THIS QUESTIONNAIRE WILL BE HELD IN STRICT CONFIDENCE AND WILL BE USED SOLELY FOR RESEARCH INTO THE EFFECTS OF ENVIRONMENTAL FACTORS ON PUBLIC HEALTH. ALL RESULTS WILL BE SUMMARIZED FOR GROUPS OF PEOPLE. NO INFORMATION ABOUT INDIVIDUAL PERSONS WILL BE RELEASED WITHOUT THE CONSENT OF THE INDIVIDUAL. WHILE YOU ARE NOT REQUIRED TO RESPOND, YOUR COOPERATION IS NEEDED TO MAKE THE RESULTS OF THIS SURVEY COMPREHENSIVE, ACCURATE AND TIMELY.

(PLACE PID LABEL HERE)

(PLACE CHEMISTRY LABEL HERE)

First, I would like to ask some general questions about you.

1. Sex (by observation):

☐ 1 Male

☐ 2 Female

2. Race (by observation):

☐ 1 Hispanic

☐ 4 Asian/Pacific Islander

☐ 2 American Indian/Alaskan Native

☐ 5 White, not of Hispanic origin

☐ 3 Black, not of Hispanic origin

☐ 6 Other (specify) _____

3. What was your age in years at last birthday? Years

4. What is your birthdate? - -
(month) (day) (year)

5. What is your approximate weight in pounds? lb ☐ 1 Do not know

6. What is your approximate height in feet and inches? ft in

Next, I would like to ask some questions about your occupation.

7. Are you presently employed in any capacity?

☐ 1 Yes (CONTINUE)

☐ 2 No (GO TO QUESTION 11)

8. a. What is your current occupation?

b. Is this your usual primary occupation?

☐ 1 Yes (GO TO QUESTION 9)

☐ 2 No (GO TO QUESTION 8c)

c. What is your primary occupation?

9. How long have you been employed in that occupation?

☐ 1 Months ☐ 2 Years

10. What is the name and street address of the company for which you work?

Name: _____

Address: _____

(GO TO QUESTION 12)

(zip code)

11. If not presently employed, which of the following best describes your status?

☐ 1 Housewife

☐ 3 Unemployed

☐ 2 Student

☐ 4 Retired

☐ 5 Disabled

(GO TO QUESTION 12)

(GO TO QUESTION 11a)

11. a. What was your main occupation?

12. Indicate whether you or any members of your household are employed in any of the listed occupations or establishments.

Occupation	You	Household Members
Painting.....	1	2
Dry cleaning.....	1	2
Chemical plant.....	1	2
Petroleum plant.....	1	2
Service station/garage/engine repair.....	1	2
Furniture repair/refinishing.....	1	2
Plastics manufacture or formulation.....	1	2
Textile mill.....	1	2
Wood processing plant.....	1	2
Printing.....	1	2
Scientific laboratory.....	1	2
Dye plant.....	1	2
Hospital.....	1	2
Metal products (casting).....	1	2
Battery or electrical components manufacture.....	1	2
Refrigerator/air conditioning repair or manufacture.....	1	2
Taxi/bus/truck driver.....	1	2
Pest control.....	1	2
Drug manufacturing or formulation.....	1	2
Photo developing.....	1	2
Landscaping/gardening.....	1	2
None of the above.....	1	2

Next, I would like to ask some questions regarding your personal habits.

13. Which of the following best describes your cigarette smoking status?

- ☐ 1 Current smoker (GO TO QUESTION 16)
- ☐ 2 Ex-smoker (CONTINUE WITH QUESTION 14)
- ☐ 3 Never smoked (GO TO QUESTION 17)

14. For how many years did you smoke at least $\frac{1}{2}$ pack of cigarettes per day?

Years

15. How long ago did you quit smoking?

☐ 1 Days ☐ 2 Weeks ☐ 3 Months ☐ 4 Years

16. a. On average, how many cigarettes do/did you smoke per day?

- ☐ 1 Less than $\frac{1}{2}$ pack
- ☐ 2 Between $\frac{1}{2}$ and $1\frac{1}{2}$ packs
- ☐ 3 More than $1\frac{1}{2}$ packs

16. b. What brand of cigarettes do/did you usually smoke?

17. Does anyone else in your household smoke cigarettes?

☐ 1 Yes

☐ 2 No

18. Do you or anyone else in your household smoke cigars or pipes?

 You
☐ 1 Yes: How many per day?

☐ 2 No

 Anyone Else
☐ 1 Yes: How many per day?

☐ 2 No

19. On average, how many hours are you in the same room, or enclosed area, with someone who is smoking? Respond for time at home, and time at work.

 At Home

☐ 1 0

☐ 2 1 to 5

☐ 3 6 to 10

☐ 4 More than 10

 At Work

☐ 1 0

☐ 2 1 to 5

☐ 3 6 to 10

☐ 4 More than 10

20. Do you or any member of your household pursue any of the following hobbies? (CHECK ALL THAT APPLY.)

Occupation	You	Household Member
Painting	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Furniture refinishing	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Scale models.	<input type="checkbox"/> 1	<input type="checkbox"/> 2
Gardening	<input type="checkbox"/> 1	<input type="checkbox"/> 2
None of these	<input type="checkbox"/> 1	<input type="checkbox"/> 2

21. Do you work with or use insecticides, pesticides, or herbicides, as in farming, gardening, or extermination?

☐ 1 Yes (GO TO QUESTION 21a)

☐ 2 No (GO TO QUESTION 21b)

a. How often would you say that you work with or use such substances?

☐ 1 Rarely

☐ 3 Often

☐ 2 Occasionally

b. How often do you have your house treated for pests?

☐ 1 Never

☐ 3 Quarterly

☐ 2 Monthly

☐ 4 Yearly

Next, I would like to ask some questions regarding your general physical status.

22. What do you consider your current physical condition? (CHECK ONE.)

☐ 1 Excellent

☐ 3 Fair

☐ 2 Good

☐ 4 Poor

23. Are you currently taking any prescription medication(s) on a regular daily basis?

☐ 1 Yes

☐ 2 No

IF YES, SPECIFY: _____

24. Have you taken any nonprescription medications (aspirin, vitamins, etc.) in the past 48 hours?

☐ 1 Yes

☐ 2 No

IF YES, SPECIFY: _____

25. Which of the following conditions have you ever been treated for?

☐ 1 Anemia

☐ 4 Chronic respiratory disease

☐ 2 Liver disease

☐ 5 None of these

☐ 3 Kidney disease

26. How would you rate your general recreational/exercise activity pattern?

☐ 1 Heavy

☐ 3 Sedentary

☐ 2 Light

27. How would you rate your activity on the job?

☐ 1 Heavy physical activity

☐ 3 Sedentary

☐ 2 Light physical activity

☐ 4 Not applicable (Retired, unemployed, or disabled)

Next, I would like to ask a question regarding your diet.

28. On the average, how often do you eat the following foods? (CHECK ALL THAT APPLY.)

Foodstuff	Daily*	More than 3 times per week	Less than 3 times per week	Once per week	Once per month	Infrequently or never
Beef	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Poultry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fresh fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canned fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fresh vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canned vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eggs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cereals, rice, breads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Indicate number of servings per day.

Foodstuff	Daily*	More than 3 times per week	Less than 3 times per week	Once per week	Once per month	Infrequently or never
Cola soft drinks	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Noncola soft drinks	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Canned juices	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Milk	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Beer	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Wine	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Coffee, tea (cooked water)	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Tap water and tap water drinks	_____	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

*Indicate number of servings per day.

Lastly, I would like to ask some questions about your residence and household.

29. How many years have you lived in this city?

Years

30. Do you cool your home with any of the following appliances? (CHECK ALL THAT APPLY.)

- | | |
|--|---|
| <input type="checkbox"/> 1 Central air conditioning | <input type="checkbox"/> 4 Ceiling exhaust fan(s) |
| <input type="checkbox"/> 2 Window air conditioner(s) | <input type="checkbox"/> 5 None of these |
| <input type="checkbox"/> 3 Portable circulating fan(s) | |

31. Do you have any of the following appliances? (CHECK ALL THAT APPLY.)

- | | |
|--|--|
| <input type="checkbox"/> 1 Gas stove | <input type="checkbox"/> 3 Gas furnace |
| <input type="checkbox"/> 2 Electric oven | <input type="checkbox"/> 4 Oil heat |

32. Does your household grow any of its own food in a home garden?

- | | |
|--------------------------------|--|
| <input type="checkbox"/> 1 Yes | <input type="checkbox"/> 3 Do not know |
| <input type="checkbox"/> 2 No | |

IF YES, SPECIFY LOCATION OF GARDEN: _____

33. Where does your household generally obtain its foodstuffs (groceries, fruit, vegetables, etc.) Specify name of the store or fruit or vegetable stand.

34. Do you use municipally supplied water for drinking and drink mixes (coffee, tea, Kool-Aid®, etc.)?

- | | |
|--|------------------------|
| <input type="checkbox"/> 1 Yes | } (GO TO QUESTION 34a) |
| <input type="checkbox"/> 2 No | |
| <input type="checkbox"/> 3 No municipal supply | |

a. What source of water do you use?

APPENDIX I-B

**RECORD OF ACTIVITIES AND ENVIRONMENTS
(24-HOUR EXPOSURE AND ACTIVITY SCREENER)
FOR STUDIES 1, 2, AND 3**

Study Number: _____

Date: ____/____/____

**24-HOUR EXPOSURE AND
ACTIVITY SCREENER
TEAM Study**

O.M.B. No. 2000-0364
Expires 9/30/86

1. Have you pumped your own gas in the past 24 hours?

☐ 1 Yes (GO TO QUESTION 1a)

☐ 2 No (GO TO QUESTION 2)

a. During which monitoring periods?

☐ 1 Overnight

☐ 2 Daytime

2. Have you done your own dry cleaning, or been in a dry cleaning establishment during the past 24 hours?

☐ 1 Yes (GO TO QUESTION 2a)

☐ 2 No (GO TO QUESTION 3)

a. During which monitoring periods?

☐ 1 Overnight

☐ 2 Daytime

3. Have you smoked cigarettes, cigars, or a pipe in the past 24 hours?

☐ 1 Yes (GO TO QUESTION 3a)

☐ 2 No (GO TO QUESTION 4)

a. During which monitoring periods?

☐ 1 Overnight

☐ 2 Daytime

4. Were you in an enclosed area with active smokers for more than 15 minutes at any time in the past 24 hours?

☐ 1 Yes (GO TO QUESTION 4a)

☐ 2 No (GO TO QUESTION 5)

a. During which monitoring periods?

☐ 1 Overnight

☐ 2 Daytime

5. Have you used or worked with insecticides, pesticides, or herbicides in any way, including farming, gardening, and extermination, in the past 24 hours?

☐ 1 Yes

☐ 2 No

6. During this time of year, on an average weekday or weekend day, how many hours per day are spent:
(Answer a through d below)

	Weekday	Weekend Day
a. Away from home	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
b. Out of doors—leisure activities	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
c. Out of doors—working	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
d. In a motor vehicle	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

7. Have you worked at any of the following occupations or been in any of the following businesses during the past week? (Check all that apply and also indicate any contact in the past 24 hours.)

	Past Week	Past 24 Hou
<input type="checkbox"/> Painting	<input type="checkbox"/> 01	<input type="checkbox"/> 02
<input type="checkbox"/> Dry cleaning	<input type="checkbox"/> 03	<input type="checkbox"/> 04
<input type="checkbox"/> Chemical plant	<input type="checkbox"/> 05	<input type="checkbox"/> 06
<input type="checkbox"/> Petroleum plant	<input type="checkbox"/> 07	<input type="checkbox"/> 08
<input type="checkbox"/> Service station/garage/engine repair	<input type="checkbox"/> 09	<input type="checkbox"/> 10
<input type="checkbox"/> Furniture refinishing or repair	<input type="checkbox"/> 11	<input type="checkbox"/> 12
<input type="checkbox"/> Plastics manufacture or formulation	<input type="checkbox"/> 13	<input type="checkbox"/> 14
<input type="checkbox"/> Textile mill	<input type="checkbox"/> 15	<input type="checkbox"/> 16
<input type="checkbox"/> Wood processing plant	<input type="checkbox"/> 17	<input type="checkbox"/> 18
<input type="checkbox"/> Printing	<input type="checkbox"/> 19	<input type="checkbox"/> 20
<input type="checkbox"/> Scientific laboratory	<input type="checkbox"/> 21	<input type="checkbox"/> 22
<input type="checkbox"/> Dye plant	<input type="checkbox"/> 23	<input type="checkbox"/> 24
<input type="checkbox"/> Hospital	<input type="checkbox"/> 25	<input type="checkbox"/> 26
<input type="checkbox"/> Metal work/smelters	<input type="checkbox"/> 27	<input type="checkbox"/> 28
<input type="checkbox"/> None of these	<input type="checkbox"/> 29	<input type="checkbox"/> 30

8. Have you been exposed to any of the following during the past week? (Check all that apply, and indicate any to which you have been exposed in the last 24 hours.)

	Past Week	Past 24 Hours
<input type="checkbox"/> Solvents (e.g., toluene, acetone, chloroform)	<input type="checkbox"/> 01	<input type="checkbox"/> 02
<input type="checkbox"/> Odorous chemicals (e.g., gasoline, sulfur, mothballs)	<input type="checkbox"/> 03	<input type="checkbox"/> 04
<input type="checkbox"/> Toxic or hazardous chemicals (e.g., pesticides)	<input type="checkbox"/> 05	<input type="checkbox"/> 06
<input type="checkbox"/> High dust or particulate levels	<input type="checkbox"/> 07	<input type="checkbox"/> 08
<input type="checkbox"/> Auto/truck exhausts (heavy or long exposure, i.e., tunnel or expressway)	<input type="checkbox"/> 09	<input type="checkbox"/> 10
<input type="checkbox"/> Cleaning solutions (including household chemicals)	<input type="checkbox"/> 11	<input type="checkbox"/> 12
<input type="checkbox"/> Degreasing compounds	<input type="checkbox"/> 13	<input type="checkbox"/> 14
<input type="checkbox"/> Other (probe)	<input type="checkbox"/> 15	<input type="checkbox"/> 16

8. a. Please list the specific name of any chemical or hazardous substance to which you have been exposed.

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

9. a. For the first time period during which you wore an air pump (Time on _____, Time off _____), please indicate your activity which lasted the most time. In addition, please indicate any other activities which lasted for more than one hour.

Activity	Location:		Level of Physical Activity:
	Indoor/ Outdoor	Urban/ Suburban/ Rural	Strenuous/ Light
1. (Longest) _____	01 02	03 04 05	06 07
2. _____	08 09	10 11 12	13 14
3. _____	15 16	17 18 19	20 21
4. _____	22 23	24 25 26	27 28

- b. Please provide the following information for each trip during this time period.

Trip	Minutes	Mode of Transport	Traffic:	Ventilation:
			Heavy/Light	Windows: Open/Closed/ NA
1.	<input type="text"/> <input type="text"/> <input type="text"/>	_____	1 2	1 2 3
2.	<input type="text"/> <input type="text"/> <input type="text"/>	_____	1 2	1 2 3
3.	<input type="text"/> <input type="text"/> <input type="text"/>	_____	1 2	1 2 3
4.	<input type="text"/> <input type="text"/> <input type="text"/>	_____	1 2	1 2 3

- c. Please indicate any unusual events which happened during this time period which might have any effect on your exposure to environmental chemicals.

10. a. For the second time period during which you wore an air pump (Time on _____, Time off _____), please indicate your activity which lasted the most time. In addition, please indicate any other activities which lasted for more than one hour.

Activity	Location:		Level of Physical Activity:
	Indoor/ Outdoor	Urban/ Suburban/ Rural	
1. (Longest) _____	01 02	03 04 05	06 07
2. _____	08 09	10 11 12	13 14
3. _____	15 16	17 18 19	20 21
4. _____	22 23	24 25 26	27 28

- b. Please provide the following information for each trip during this time period.

Trip	Minutes	Mode of Transport	Traffic:	Ventilation:
			Heavy/Light	Windows: Open/Closed/ NA
1.	<input type="text"/>	_____	1 2	1 2 3
2.	<input type="text"/>	_____	1 2	1 2 3
3.	<input type="text"/>	_____	1 2	1 2 3
4.	<input type="text"/>	_____	1 2	1 2 3

- c. Please indicate any unusual events which happened during this time period which might have any effect on your exposure to environmental chemicals.

APPENDIX I-C

STUDY QUESTIONNAIRES FOR STUDIES 4 AND 5

The first Study Questionnaire included in this appendix was given at the beginning of Study 4. The second questionnaire, marked season 2 form 1, was given at the beginning of Study 5 to those participants who had also participated in Study 4. The third questionnaire, marked season 2 form 2, was given to those participants in Study 5 who had not participated in Study 4.

OMB NO. 2080-0027

EXPIRES: January 1988

**STUDY ON TOXIC CHEMICALS IN
ENVIRONMENTAL AND HUMAN SAMPLES**

Conducted by:

Research Triangle Institute
P.O. Box 12194
Research Triangle Park, North Carolina 27709

**STUDY
QUESTIONNAIRE**

THE RESEARCH TRIANGLE INSTITUTE OF RESEARCH TRIANGLE PARK, NORTH CAROLINA, IS UNDERTAKING A RESEARCH STUDY FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY AND THE CALIFORNIA AIR RESOURCES BOARD TO ASSESS LEVELS AND RELATIONSHIPS OF SELECTED TOXIC COMPOUNDS IN HUMAN AND ENVIRONMENTAL MEDIA. THE INFORMATION RECORDED IN THIS QUESTIONNAIRE WILL BE HELD IN STRICT CONFIDENCE AND WILL BE USED SOLELY FOR RESEARCH INTO THE EFFECTS OF ENVIRONMENTAL FACTORS ON PUBLIC HEALTH. ALL RESULTS WILL BE SUMMARIZED FOR GROUPS OF PEOPLE; NO INFORMATION ABOUT INDIVIDUAL PERSONS WILL BE RELEASED WITHOUT THE CONSENT OF THE INDIVIDUAL. WHILE YOU ARE NOT REQUIRED TO RESPOND, YOUR COOPERATION IS NEEDED TO MAKE THE RESULTS OF THIS SURVEY COMPREHENSIVE, ACCURATE AND TIMELY.

[(PLACE PID LABEL HERE)]

[(PLACE CHEMISTRY LABEL HERE)]

First, I would like to ask some questions about your occupation.

1. Are you presently employed in any capacity? (CIRCLE RESPONSE CODE)

1 Yes (CONTINUE)

2 No (GO TO QUESTION 4)

2. a. What is your current occupation?

b. Is this your usual primary occupation?

1 Yes (GO TO QUESTION 3)

2 No

c. What is your primary occupation?

3. What is the name and street address of the organization for which you work?

Name: _____

Address: _____ Room # _____ ZIP _____

(GO TO QUESTION 6)

4. IF NOT PRESENTLY EMPLOYED: Which of the following best describes your status?

1 Housewife }
2 Student } (GO TO QUESTION 6)

3 Unemployed }
4 Retired } (GO TO QUESTION 5)
5 Disabled }

5. What was your main occupation?

=====

Next, I would like to ask some questions regarding your personal habits.

6. Which of the following best describes your cigarette smoking status? (READ ANSWER CHOICES AND CIRCLE ONE)

- 1 Current smoker (GO TO QUESTION 7a)
- 2 Ex-smoker (CONTINUE WITH QUESTION 8a)
- 3 Never smoked (GO TO QUESTION 8a)

7. a. On average, how many cigarettes do you smoke per day?

- 1 Less than 1/2 pack
- 2 1/2 pack or more, but less than 1 pack
- 3 1 pack or more, but less than 1 1/2 packs
- 4 1 1/2 packs or more, but less than 2 packs
- 5 More than 2 packs

b. What is the number that appears on the side panel of the brand of cigarettes you usually smoke?

Number _____

c. Do you usually inhale the smoke?

- 1 Yes
- 2 No

8. a. Does anyone else in your household smoke cigarettes?

- 1 Yes
- 2 No

- b. Which rooms do smokers, living or visiting in the home, smoke in most often between the hours of (a) 7 a.m. and 6 p.m.? and (b) 6 p.m. and 7 a.m.? (CIRCLE ALL THAT APPLY FOR EACH TIME PERIOD)

	(DAYTIME)	(EVENING/NIGHT)
	a. <u>7 a.m. - 6 p.m.</u>	b. <u>6 p.m. - 7 a.m.</u>
Living room	1	1
Dining room	2	2
Kitchen	3	3
Den	4	4
Master bedroom	5	5
Other bedroom (SPECIFY WHOSE)	6 _____	6 _____
Other room (SPECIFY)	7 _____	7 _____
NONE	8	8

(RECORD ANSWER(S) ABOVE AND ON LAST PAGE)

9. a. Do you use any of the following tobacco products on a regular basis?
- IF YES:
b. About how many times a day or week do you use (NAME OF TOBACCO PRODUCT)?
- | | <u>YES</u> | <u>NO</u> | <u>TIMES</u> | <u>PER</u> | <u>DAY</u> | <u>WEEK</u> |
|---------------------|------------|-----------|--------------|------------|------------|-------------|
| (1) Pipes | 1 | 2 | _____ | | 1 | 2 |
| (2) Cigars | 1 | 2 | _____ | | 1 | 2 |
| (3) Snuff | 1 | 2 | _____ | | 1 | 2 |
| (4) Chewing Tobacco | 1 | 2 | _____ | | 1 | 2 |

10. Do you or any member of your household pursue any of the following hobbies?
(FOR EACH YES, ASK WHO?)

Hobbies	No	You	Household Member
Painting.....	0	1	2
Furniture refinishing.....	0	1	2
Scale models.....	0	1	2
Gardening.....	0	1	2
House plants.....	0	1	2
Automobile or bicycle repair.....	0	1	2

11. Have you worked with or used pesticides or herbicides outdoors for more than 1 hour at a time in the past 6 months?

1 Yes

2 No

12. a. Did you or any member of the household use pesticides in the home in the past 6 months?

1 Yes

2 No (GO TO QUESTION 13)

- b. In which rooms?

1 Living Room

5 Master Bedroom

2 Dining Room

6 Other Bedroom (SPECIFY WHOSE)

3 Kitchen

7 Other Room (SPECIFY)

4 Den

(RECORD ANSWER(S) ABOVE AND ON LAST PAGE)

13. a. Did you pay someone to have your home treated for pests in the past 6 months?

1 Yes

2 No (GO TO QUESTION 13d)

- b. About how many times in the past 6 months?

_____ Times

13. c. When was the last time you paid someone to have your home treated for pests? (RECORD NUMBER OF TIMES AND CIRCLE APPROPRIATE CODE FOR UNIT OF TIME)

_____ 1 Days ago 2 Weeks ago 3 Months ago 4 Other (SPECIFY) _____

- d. In the past 6 months, did you have any drapes, carpeting, or furniture that you use in your home commercially cleaned?

1 Yes

2 No (GO TO QUESTION 14)

- e. About how many times in the last 6 months?

_____ Times

- f. When was the last time you had any drapes, carpeting, or furniture that you use in your home commercially cleaned? (RECORD NUMBER OF TIMES AND CIRCLE APPROPRIATE CODE FOR UNIT OF TIME)

_____ 1 Days ago 2 Weeks ago 3 Months ago 4 Other (SPECIFY) _____

14. In which areas of your home do you and other household members spend most of your waking hours? (CIRCLE ALL THAT APPLY)

1 Living Room

5 Master Bedroom

2 Dining Room

6 Other Bedroom (SPECIFY WHOSE)

3 Kitchen

7 Other Room (SPECIFY)

4 Den

(RECORD ANSWER(S) ABOVE AND ON LAST PAGE)

15. Do you have any of the following in your home? (READ AND CIRCLE ALL THAT APPLY.)

1 Central air conditioning

4 Ceiling exhaust fan(s)

2 Window air conditioner(s)

5 None of these

3 Portable circulating fan(s)

(RECORD ANSWER(S) ABOVE AND ON LAST PAGE)

16. a. Do you have a fireplace in your home?

1 Yes

2 No (GO TO QUESTION 17a)

b. Is the damper open now?

1 Yes

2 No

(RECORD ANSWERS ABOVE AND ON LAST PAGE)

17. a. Are you now using mothballs or moth crystals in your home?

1 Yes

2 No (GO TO QUESTION 18a)

SPECIFY BRAND NAME _____

b. Specifically, where are you using them?

(RECORD ANSWER(S) ABOVE AND ON LAST PAGE)

18. a. Do you use indoor air fresheners of any type? (e.g., sprays or liquid wick)

1 Yes

2 No (GO TO QUESTION 19)

b. In which room(s) are these fresheners used?

c. How often are they used?

	<u>TIMES</u>	<u>PER</u>	<u>DAY</u>	<u>WEEK</u>	<u>MONTH</u>	<u>YEAR</u>	<u>CONTINUOUS</u>
_____	____/	1	2	3	4	5	
_____	____/	1	2	3	4	5	
_____	____/	1	2	3	4	5	
_____	____/	1	2	3	4	5	

(RECORD ANSWER(S) ABOVE AND ON LAST PAGE)

19. Do you use bathroom deodorants attached to a wall or toilet bowl?

1 Yes

2 No

20. a. Is your water supplied by a municipality or corporation?

1 Yes

2 No (GO TO QUESTION 20f)

b. How often do you use water supplied by a municipality or corporation for drinking and drink mixes (coffee, tea, etc.) at home? (READ AND CIRCLE ONE)

1 Always

3 Sometimes

2 Usually

4 Never

c. Do you use bottled water?

1 Yes

2 No

d. Do you sometimes drink water from your sink or refrigerator tap?

1 Yes

2 No (GO TO QUESTION 20f)

e. When you drink water from the tap, do you usually run the water for a time before filling your glass or drink the first water out of the tap?

1 Usually run the water for a time

2 Usually drink the first water out of the tap

f. Do you have a filter on your water tap or any other type of filter that purifies the water?

1 Yes

2 No

21. a. Is there a residential garage attached to or contained in the same building as your home?

1 Yes

2 No (GO TO QUESTION 22)

b. About how often can you smell odors in adjacent rooms? (READ AND CIRCLE ONE)

1 Frequently

2 Sometimes

3 Never

(RECORD ANSWERS ABOVE AND ON LAST PAGE)

22. Do you store any of the following items in any structure that is attached to or part of your home, such as a garage, basement, or storage room? (READ EACH ITEM AND CIRCLE APPROPRIATE RESPONSE CODE.)

	<u>Yes</u>	<u>No</u>
Kerosene.....	1	2
Gasoline.....	1	2
Gasoline-powered lawn mower.....	1	2
An automobile.....	1	2
Motorcycle.....	1	2
Pesticides, insecticides, or lawn and garden chemicals.....	1	2

23. a. Do you store cleaning supplies (e.g., chlorine bleaches, detergents) in the following places? b. IF YES: Does this area or room have an odor?

	<u>Yes</u>	<u>No</u>	<u>Usually</u>	<u>Sometimes</u>	<u>Never</u>
Kitchen	1	2	1	2	3
Utility room	1	2	1	2	3
Bathroom	1	2	1	2	3
Basement	1	2	1	2	3
Other (SPECIFY	1	2	1	2	3

 (RECORD ANSWER(S) ABOVE AND ON LAST PAGE)

24. a. Do you store paints, varnishes or paint thinners or removers in the following places?

	<u>Yes</u>	<u>No</u>	<u>NA</u>
(1) Attached garage?	1	2	3
(2) Basement?	1	2	3
(3) Attic?	1	2	3
(4) Attached shop or workroom?	1	2	3
(5) Other (SPECIFY) _____	1	2	3

b. IF YES: Is there an odor near these materials?

<u>Yes</u>	<u>No</u>
1	2
1	2
1	2
1	2
1	2

(RECORD ANSWER(S) ABOVE AND ON LAST PAGE)

Finally, I would like to ask some general questions about you.

25. Sex (by observation): (CIRCLE RESPONSE CODE)

1 Male

2 Female

26. Race (by observation): (CIRCLE RESPONSE CODE)

1 Hispanic

4 Asian/Pacific Islander

2 American Indian/Alaskan Native

5 White, not of Hispanic origin

3 Black, not of Hispanic origin

27. What is your birthdate? _____
(month) (day) (year)

28. What is your approximate weight? _____ lbs. 1 Do not know

29. What is your approximate height in feet and inches? _____ ft. _____ in.

OMB NO. 2080-0027

EXPIRES: January 1988

STUDY ON TOXIC CHEMICALS IN
ENVIRONMENTAL AND HUMAN SAMPLES
SEASON 2 (Form 1)

Conducted by:

Research Triangle Institute
P.O. Box 12194
Research Triangle Park, North Carolina 27709

STUDY
QUESTIONNAIRE

THE RESEARCH TRIANGLE INSTITUTE OF RESEARCH TRIANGLE PARK, NORTH CAROLINA, IS UNDERTAKING A RESEARCH STUDY FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY AND THE CALIFORNIA AIR RESOURCES BOARD TO ASSESS LEVELS AND RELATIONSHIPS OF SELECTED TOXIC COMPOUNDS IN HUMAN AND ENVIRONMENTAL MEDIA. THE INFORMATION RECORDED IN THIS QUESTIONNAIRE WILL BE HELD IN STRICT CONFIDENCE AND WILL BE USED SOLELY FOR RESEARCH INTO THE EFFECTS OF ENVIRONMENTAL FACTORS ON PUBLIC HEALTH. ALL RESULTS WILL BE SUMMARIZED FOR GROUPS OF PEOPLE; NO INFORMATION ABOUT INDIVIDUAL PERSONS WILL BE RELEASED WITHOUT THE CONSENT OF THE INDIVIDUAL. WHILE YOU ARE NOT REQUIRED TO RESPOND, YOUR COOPERATION IS NEEDED TO MAKE THE RESULTS OF THIS SURVEY COMPREHENSIVE, ACCURATE AND TIMELY.

[(PLACE PID LABEL HERE)]

Use Form 2

(IF NOT ORIGINAL PARTICIPANT, ~~GO TO Q2~~, OTHERWISE, CONTINUE WITH LEAD-IN STATEMENT AND Q1.)

I would like to ask you just a few questions about any changes that may have occurred since we saw you in February.

1. Has your employment status changed since February?

- 1 Yes (CONTINUE) 2 No (GO TO QUESTION 6)

2. a. Are you presently employed in any capacity? (CIRCLE RESPONSE CODE)

- 1 Yes (CONTINUE) 2 No (GO TO QUESTION 4)

b. What is your job title? What are your main duties on the job?

c. What kind of business or industry is that in--what do they make or do at the place where you work?

d. Is this your usual primary occupation?

- 1 Yes (GO TO QUESTION 3) 2 No (CONTINUE)

e. What is your job title in your primary occupation? What are your main duties on the job?

f. What kind of business or industry is that in--what do they make or do at this place?

3. What is the name and street address of the organization for which you work?

Name: _____

Address: _____ Room # _____ ZIP _____

(GO TO QUESTION 6)

4. IF NOT PRESENTLY EMPLOYED: Which of the following best describes your status? (READ AND CIRCLE ONE RESPONSE CODE)

- | | | | |
|-------------|----------------------|--------------|----------------------|
| 1 Housewife | } (GO TO QUESTION 6) | 3 Unemployed | } (GO TO QUESTION 5) |
| 2 Student | | 4 Retired | |
| | | 5 Disabled | |

5. a. What was your job title? What were your main duties on the job?

b. What kind of business or industry was this--what did they make or do at this place?

6. Which of the following best describes your current cigarette smoking status? (READ ANSWER CHOICES AND CIRCLE ONE)

- 1 Current smoker (CONTINUE)
- 2 Ex-smoker (GO TO QUESTION 8a)
- 3 Never smoked (GO TO QUESTION 8a)

7. a. On average, how many cigarettes do you currently smoke per day?

- 1 Less than 1/2 pack
- 2 1/2 pack or more, but less than 1 pack
- 3 1 pack or more, but less than 1 1/2 packs
- 4 1 1/2 packs or more, but less than 2 packs
- 5 More than 2 packs

b. What is the number that appears on the side panel of the brand of cigarettes you currently smoke?

Number _____

c. Do you usually inhale the smoke?

- | | |
|-------|------|
| 1 Yes | 2 No |
|-------|------|

8. a. Does anyone else in your household currently smoke cigarettes?

1 Yes (CONTINUE)

2 No (GO TO QUESTION 9a)

b. How many people in your household smoke cigarettes?

_____ People

9. a. Since February 1987, have you or someone else done any of the following inside your home?

	<u>Yes</u>	<u>No</u>	<u>DK</u>
1. Painted?	01	02	94
2. Obtained new furniture?	01	02	94
3. Obtained new carpeting or other floor covering?	01	02	94
4. Drycleaned drapes or curtains?	01	02	94
5. Shampooed a wool or wool- based carpet?	01	02	94
6. Refinished furniture?	01	02	94
7. Reupholstered furniture?	01	02	94
8. Paneled walls?	01	02	94
9. Plastered walls?	01	02	94
10. Remodeled any rooms?	01	02	94
11. Caulked bathtubs, sinks, or shower stalls?	01	02	94
12. Installed new insulation?	01	02	94

b. Have you done anything else inside your home since February?

1 Yes (CONTINUE)

2 No (END OF INTERVIEW)

c. What have you done?

10. INTERVIEWER: Which one of the following best describes the Season 2 participant?

- 1 Same participant as Season 1 (END INTERVIEW)
- 2 Different participant, same family as Season 1 (CONTINUE)
- 3 Different participant, different family (CONTINUE)

11. INTERVIEWER: What is the sex of the participant?

- 1 Male
- 2 Female

12. What is your birthdate?

(Month) (Day) (Year)

OMB NO. 2080-0027

EXPIRES: January 1988

STUDY ON TOXIC CHEMICALS IN
ENVIRONMENTAL AND HUMAN SAMPLES
SEASON 2 (FORM 2)

Conducted by:

Research Triangle Institute
P.O. Box 12194
Research Triangle Park, North Carolina 27709

STUDY
QUESTIONNAIRE

THE RESEARCH TRIANGLE INSTITUTE OF RESEARCH TRIANGLE PARK, NORTH CAROLINA, IS UNDERTAKING A RESEARCH STUDY FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY AND THE CALIFORNIA AIR RESOURCES BOARD TO ASSESS LEVELS AND RELATIONSHIPS OF SELECTED TOXIC COMPOUNDS IN HUMAN AND ENVIRONMENTAL MEDIA. THE INFORMATION RECORDED IN THIS QUESTIONNAIRE WILL BE HELD IN STRICT CONFIDENCE AND WILL BE USED SOLELY FOR RESEARCH INTO THE EFFECTS OF ENVIRONMENTAL FACTORS ON PUBLIC HEALTH. ALL RESULTS WILL BE SUMMARIZED FOR GROUPS OF PEOPLE; NO INFORMATION ABOUT INDIVIDUAL PERSONS WILL BE RELEASED WITHOUT THE CONSENT OF THE INDIVIDUAL. WHILE YOU ARE NOT REQUIRED TO RESPOND, YOUR COOPERATION IS NEEDED TO MAKE THE RESULTS OF THIS SURVEY COMPREHENSIVE, ACCURATE AND TIMELY.

[(PLACE PID LABEL HERE)]

(USE FORM 1 IF ORIGINAL PARTICIPANT; OTHERWISE, CONTINUE WITH LEAD-IN STATEMENT AND Q1.)

First, I would like to ask some questions about your occupation.

1. a. Are you presently employed in any capacity? (CIRCLE RESPONSE CODE)

1 Yes (CONTINUE) 2 No (GO TO QUESTION 3)

- b. What is your job title? What are your main duties on the job?

- c. What kind of business or industry is that in--what do they make or do at the place where you work?

- d. Is this your usual primary occupation?

1 Yes (GO TO QUESTION 2) 2 No (CONTINUE)

- e. What is your job title in your primary occupation? What are your main duties on the job?

- f. What kind of business or industry is that in--what do they make or do at this place?

2. What is the name and street address of the organization for which you work?

Name: _____

Address: _____ Room # _____ ZIP _____

(GO TO QUESTION 5)

3. IF NOT PRESENTLY EMPLOYED: Which of the following best describes your status? (READ AND CIRCLE ONE RESPONSE CODE)

- | | | | |
|-------------|----------------------|--------------|----------------------|
| 1 Housewife | } (GO TO QUESTION 5) | 3 Unemployed | } (GO TO QUESTION 4) |
| 2 Student | | 4 Retired | |
| | 5 Disabled | | |

4. a. What was your job title? What were your main duties on the job?

b. What kind of business or industry was this--what did they make or do at this place?

5. Which of the following best describes your current cigarette smoking status? (READ ANSWER CHOICES AND CIRCLE ONE)

- 1 Current smoker (CONTINUE)
- 2 Ex-smoker (GO TO QUESTION 7a)
- 3 Never smoked (GO TO QUESTION 7a)

6. a. On average, how many cigarettes do you currently smoke per day?

- 1 Less than 1/2 pack
- 2 1/2 pack or more, but less than 1 pack
- 3 1 pack or more, but less than 1 1/2 packs
- 4 1 1/2 packs or more, but less than 2 packs
- 5 More than 2 packs

b. What is the number that appears on the side panel of the brand of cigarettes you currently smoke?

Number _____

c. Do you usually inhale the smoke?

- 1 Yes
- 2 No

7. a. Does anyone else in your household currently smoke cigarettes?

1 Yes (CONTINUE)

2 No (GO TO QUESTION 8a)

b. How many people in your household smoke cigarettes?

_____ People

8. Which rooms do smokers, living or visiting in the home, smoke in most often between the hours of (a) 7 a.m. and 6 p.m.? and (b) 6 p.m. and 7 a.m.? (CIRCLE ALL THAT APPLY FOR EACH TIME PERIOD)

	(DAYTIME) a. 7 a.m. - 6 p.m.	(EVENING/NIGHT) b. 6 p.m. - 7 a.m.
Living room	1	1
Dining room	2	2
Kitchen	3	3
Den	4	4
Master bedroom	5	5
Other bedroom (SPECIFY WHOSE)	6 _____	6 _____
Other room (SPECIFY)	7 _____	7 _____
NONE	8	8

9. a. Do you use any of the following tobacco products on a regular basis?

IF YES:

b. About how many times a day or week do you use (NAME OF TOBACCO PRODUCT)?

	<u>YES</u>	<u>NO</u>	<u>TIMES</u>	<u>PER</u>	<u>DAY</u>	<u>WEEK</u>
(1) Pipes	1	2	_____		1	2
(2) Cigars	1	2	_____		1	2
(3) Snuff	1	2	_____		1	2
(4) Chewing Tobacco	1	2	_____		1	2

10. Do you or any member of your household pursue any of the following hobbies?
(FOR EACH YES, ASK WHO?)

<u>Hobbies</u>	<u>No</u>	<u>You</u>	<u>Household Member</u>
Painting.....	0	1	2
Furniture refinishing.....	0	1	2
Scale models.....	0	1	2
Gardening.....	0	1	2
House plants.....	0	1	2
Automobile or bicycle repair.....	0	1	2

11. Have you worked with or used pesticides or herbicides outdoors for more than 1 hour at a time in the past 6 months?

1 Yes

2 No

12. a. Did you or any member of the household use pesticides in the home in the past 6 months?

1 Yes

2 No (GO TO QUESTION 13)

- b. In which rooms?

1 Living Room

5 Master Bedroom

2 Dining Room

6 Other Bedroom (SPECIFY WHOSE)

3 Kitchen

7 Other Room (SPECIFY)

4 Den

13. a. Did you pay someone to have your home treated for pests in the past 6 months?

1 Yes

2 No (GO TO QUESTION 13d)

- b. About how many times in the past 6 months?

_____ Times

- 1 Days ago 2 Weeks ago 3 Months ago 4 Other (SPECIFY)

- 1 Yes** **2 No (GO TO QUESTION 14)**

- Times

- 1 Days ago 2 Weeks ago 3 Months ago 4 Other (SPECIFY)

- | | <u>Yes</u> | <u>No</u> | <u>DK</u> |
|--|------------|-----------|-----------|
| 1. Painted? | 01 | 02 | 94 |
| 2. Obtained new furniture? | 01 | 02 | 94 |
| 3. Obtained new carpeting or other floor covering? | 01 | 02 | 94 |
| 4. Shampooed a wool or wool-based carpet? | 01 | 02 | 94 |
| 5. Refinished furniture? | 01 | 02 | 94 |
| 6. Reupholstered furniture? | 01 | 02 | 94 |
| 7. Paneled walls? | 01 | 02 | 94 |
| 8. Plastered walls? | 01 | 02 | 94 |
| 9. Remodeled any rooms? | 01 | 02 | 94 |
| 10. Caulked bathtubs, sinks, or shower stalls? | 01 | 02 | 94 |
| 11. Installed new insulation? | 01 | 02 | 94 |

b. Have you done anything else inside your home in the past 6 months?

1 Yes (CONTINUE)

2 No (END OF INTERVIEW)

c. What have you done?

15. In which areas of your home do you and other household members spend most of your waking hours? (CIRCLE ALL THAT APPLY)

1 Living Room

5 Master Bedroom

2 Dining Room

6 Other Bedroom (SPECIFY WHOSE)

3 Kitchen

7 Other Room (SPECIFY)

4 Den

16. a. Are you now using mothballs or moth crystals in your home?

1 Yes

2 No (GO TO QUESTION 17a)

SPECIFY BRAND NAME

b. Specifically, where are you using them?

17. a. Do you use indoor air fresheners of any type? (e.g., sprays or liquid wick)

1 Yes

2 No (GO TO QUESTION 18)

- b. In which room(s) are these fresheners used? c. How often are they used?

	<u>TIMES</u>	<u>PER DAY</u>	<u>WEEK</u>	<u>MONTH</u>	<u>YEAR</u>	<u>CONTINUOUS</u>
_____	____/	1	2	3	4	5
_____	____/	1	2	3	4	5
_____	____/	1	2	3	4	5
_____	____/	1	2	3	4	5

18. Do you use bathroom deodorants attached to a wall or toilet bowl?

- 1 Yes 2 No

19. a. Is your water supplied by a municipality or corporation?

- 1 Yes 2 No (GO TO QUESTION 19f)

b. How often do you use water supplied by a municipality or corporation for drinking and drink mixes (coffee, tea, etc.) at home? (READ AND CIRCLE ONE)

- 1 Always 3 Sometimes
2 Usually 4 Never

c. Do you use bottled water?

- 1 Yes 2 No

d. Do you sometimes drink water from your sink or refrigerator tap?

- 1 Yes 2 No (GO TO QUESTION 19f)

e. When you drink water from the tap, do you usually run the water for a time before filling your glass or drink the first water out of the tap?

- 1 Usually run the water for a time
2 Usually drink the first water out of the tap

f. Do you have a filter on your water tap or any other type of filter that purifies the water?

- 1 Yes 2 No

20. a. Is there a residential garage attached to or contained in the same building as your home?

1 Yes

2 No (GO TO QUESTION 21)

b. About how often can you smell odors in adjacent rooms? (READ AND CIRCLE ONE)

1 Frequently

2 Sometimes

3 Never

21. Do you store any of the following items in any structure that is attached to or part of your home, such as a garage, basement, or storage room? (READ EACH ITEM AND CIRCLE APPROPRIATE RESPONSE CODE.)

	<u>Yes</u>	<u>No</u>
Kerosene.....	1	2
Gasoline.....	1	2
Gasoline-powered lawn mower.....	1	2
An automobile.....	1	2
Motorcycle.....	1	2
Pesticides, insecticides, or lawn and garden chemicals.....	1	2

22. a. Do you store cleaning supplies (e.g., chlorine bleaches, detergents) in the following places?

b. IF YES: Does this area or room have an odor?

	<u>Yes</u>	<u>No</u>	<u>Usually</u>	<u>Sometimes</u>	<u>Never</u>
Kitchen	1	2	1	2	3
Utility room	1	2	1	2	3
Bathroom	1	2	1	2	3
Basement	1	2	1	2	3
Other (SPECIFY	1	2	1	2	3

23. a. Do you store paints, varnishes or paint thinners or removers in the following places?

	<u>Yes</u>	<u>No</u>	<u>NA</u>
(1) Attached garage?	1	2	3
(2) Basement?	1	2	3
(3) Attic?	1	2	3
(4) Attached shop or workroom?	1	2	3
(5) Other (SPECIFY) _____	1	2	3

b. IF YES: Is there an odor near these materials?

	<u>Yes</u>	<u>No</u>
	1	2
	1	2
	1	2
	1	2
	1	2

Finally, I would like to ask some general questions about you.

24. Sex (DO NOT ASK): (CIRCLE RESPONSE CODE)

1 Male

2 Female

25. Which one of the following best describes you. Are you ...:
(READ AND CIRCLE RESPONSE CODE)

1 Hispanic,

4 Asian/Pacific Islander, or

2 American Indian/Alaskan Native,

5 White, not of Hispanic origin?

3 Black, not of Hispanic origin,

26. What is your birthdate? _____
(month) (day) (year)

27. What is your approximate weight? _____ lbs. 1 Do not know

28. What is your approximate height in feet and inches? _____ ft. _____ in.

(END INTERVIEW)

29. INTERVIEWER: Which one of the following best describes the Season 2 participant?

- 1 Same participant as Season 1
- 2 Different participant, same family as Season 1
- 3 Different participant, different family

APPENDIX I-D

**RECORD OF ACTIVITIES AND ENVIRONMENTS
(24-HOUR EXPOSURE RECALL AND ACTIVITY SCREENER)
FOR STUDIES 4 AND 5**

TEAM STUDY
24-HOUR RECALL
EXPOSURE AND ACTIVITY QUESTIONNAIRE

P.I.D. _____

DATE / /

THE FOLLOWING QUESTIONS ARE FOR THE PAST 24-HOUR PERIOD.

1. a. Have you pumped your own gasoline during the past 24 hours.

1 Yes

2 No

IF YES:

- b. Was a vapor lock device (nozzle protector) in use?

1 Yes

2 No

- c. Did you pump leaded or unleaded?

1 Leaded

2 Unleaded

- d. At what time?

_____ a.m.

_____ p.m.

2. a. Do you have clothes in the house that have been dry-cleaned in the past week?

1 Yes

2 No
(GO TO QUESTION 3)

- b. Did you wear any of these clothes in the past 24 hours?

1 Yes

2 No

IF YES:

- c. For how long did you wear these clothes?

_____ Hrs.

_____ Mins.

3. a. Did you smoke any cigarettes during the first monitoring period, that is, between (TIME) and (TIME)?

1 Yes

2 No

IF YES:

- b. About how many cigarettes did you smoke?

- c. Did you smoke any cigarettes during the second monitoring period, that is, between (TIME) and (TIME)?

1 Yes

2 No

IF YES:

- d. About how many cigarettes did you smoke?

4. Have you used any of the following tobacco products in the past 24 hours?

YES

NO

- a. Pipes?

1.

2

- b. Cigars?

1

2

- c. Snuff?

1

2

- d. Chewing tobacco?

1

2

5. a. Were you in the same room or enclosed area with someone who was smoking in the past 24 hours? (e.g., at home, at work, at parties)

1 Yes

2 No

IF YES:

- b. About how much time were you exposed to others' smoke?

_____ Hrs.

_____ Mins.

- c. Including yourself, how many people were smoking?

_____ People

6. Have you used or worked with insecticides, pesticides, or herbicides in any way, including farming or gardening in the past 24 hours?

1 Yes

2 No

IF YES:

- (1) ENTER SPECIFIC PRODUCT NAME.

- a. Ending at what time?

a.m.

_____ p.m.

- b. For how long?

_____ Hrs.

_____ Mins.

(2) ENTER SPECIFIC PRODUCT
NAME.

a. Ending at what time?

b. For how long?

a.m.
p.m.

____ Hrs. ____ Mins.

(3) ENTER SPECIFIC PRODUCT
NAME.

a. Ending at what time?

b. For how long?

a.m.
p.m.

____ Hrs. ____ Mins.

7. a. Did you go to work today
in your regular occupation?

1 Yes 2 No 3 Unemployed

IF YES:

b. What time did you go to work?

a.m.
p.m.

c. What time did you leave work?

a.m.
p.m.

HAVE YOU USED OR BEEN NEAR ANY OF THE FOLLOWING IN THE PAST 24 HOURS?

8. Paints/solvents (e.g.,
acetone, chloroform,
toluene)?

1 Yes 2 No

IF YES:

(1) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

a.m.
p.m.

____ Hrs. ____ Mins.

(2) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

a.m.
p.m.

____ Hrs. ____ Mins.

9. Odorous, vaporizing glues
or adhesives?

1 Yes

2 No

IF YES:

(1) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

(2) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

_____ a.m.
_____ p.m.

_____ Hrs. _____ Mins.

_____ a.m.
_____ p.m.

_____ Hrs. _____ Mins.

10. Moth crystals, room air
freshener, or bathroom
deodorizers?

1 Yes

2 No

IF YES:

(1) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

(2) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

_____ a.m.
_____ p.m.

_____ Hrs. _____ Mins.

_____ a.m.
_____ p.m.

_____ Hrs. _____ Mins.

11. Petroleum products (e.g.,
gasoline, fuel oil, motor
oil, kerosene, etc., exclud-
ing pumping your own gas?

1 Yes

2 No

IF YES:

(1) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

_____ a.m.
_____ p.m.

_____ Hrs. _____ Mins.

(2) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

a.m.
p.m.

____Hrs. ____Mins.

12. Auto/truck/lawn mower
exhausts (heavy or long
exposure, e.g., attached
garage, tunnel, expressway?

1 Yes

2 No

IF YES:
a. Ending at what time?

b. For how long?

a.m.
p.m.

____Hrs. ____Mins.

a. Ending at what time?

b. For how long?

a.m.
p.m.

____Hrs. ____Mins.

13. Cleaning solutions (includ-
ing household cleansers or
chemicals)?

1 Yes

2 No

IF YES:
(1) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

a.m.
p.m.

____Hrs. ____Mins.

(2) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

a.m.
p.m.

____Hrs. ____Mins.

14. Flea collars, flea powder,
or pet shampoo?

1 Yes

2 No

IF YES:

(1) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

(2) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

a.m.
____ p.m.
____ Hrs. ____ Mins.

a.m.
____ p.m.
____ Hrs. ____ Mins.

15. Aerosol sprays, such as
cleaning, polishing, or
waxing agents, or hair
sprays, or deodorants?

1 Yes

2 No

IF YES:

(1) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

(2) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

a.m.
____ p.m.
____ Hrs. ____ Mins.

a.m.
____ p.m.
____ Hrs. ____ Mins.

16. Any other product that involved
exposure to chemicals?

1 Yes

2 No

IF YES:

(1) SPECIFY THE PRODUCT
NAME

a. Ending at what time?

b. For how long?

a.m.
____ p.m.
____ Hrs. ____ Mins.

(2) SPECIFY THE PRODUCT
NAME

- _____
- a.m.
_____ p.m.
- a. Ending at what time?
- b. For how long? _____ Hrs. _____ Mins.
17. a. Did you take any showers or baths in the house or anywhere else in the past 24 hours? 1 Yes 2 No
- IF YES:
- b. Was the bathroom exhaust fan on while you were taking a bath or shower? 1 Yes 2 No
- c. If you took a shower, how long did the water run? _____ Mins. 99 Not applicable
- d. In the past 24 hours, were you in a swimming pool, sauna, spa, or hot tub? 1 Yes 2 No
- IF YES:
- e. For how long? _____ Hrs. _____ Mins.
18. a. Did anyone else take showers or baths in the house in the past 24 hours? 1 Yes 2 No
- IF YES:
- b. How many baths and showers were taken? _____
19. Was a dishwasher in use while you were in the house in the past 24 hours? 1 Yes 2 No

20. a. Was a clotheswasher
in use while you were
in the house in the past
24 hours?

1 Yes

2 No
(GO TO QUESTION 21)

IF YES:

- b. How many loads were
washed with:

(1) hot or warm water?

_____ Loads

(2) cold water?

_____ Loads

- c. Was bleach used?

1 Yes

2 No

IF YES:

- d. What brand name?

21. What is your best estimate of the number of hours you spent in each of
the following environments during the past 24 hours?

- a. Indoors at home?
(Include sleeping time)

_____ Hrs.

- b. Indoors, for your
occupational work?

_____ Hrs.

- c. Indoors for other
activities?

_____ Hrs.

- d. Outdoors, for your
occupational work?

_____ Hrs.

- e. Outdoors for other
activities?

_____ Hrs.

TOTAL HOURS

_____ Hrs.

(IF TOTAL FOR COLUMN IS LESS THAN 23 OR MORE THAN 25, RESOLVE DISCREPANCY
WITH RESPONDENT.)

22. a. In the past 24 hours, which of the following combustion sources did you use in your home or in attached structures, such as a garage, basement, or storage room?

IF YES:
b. In which room(s) or area are they located?

	<u>YES</u>	<u>NO</u>	
(1) Gas cooking range or oven?	1	2	_____
(2) Gas water heater?	1	2	_____
(3) Gas clothes dryer?	1	2	_____
(4) Gas or kerosene space heater?	1	2	_____
(5) Fireplace?	1	2	_____
(6) Wood stove?	1	2	_____
(7) Gas furnace?	1	2	_____
(8) Other combustion appliances? (SPECIFY)	1	2	_____

23. During the past 24 hours, how many cans, bottles, or glasses of the following beverages did you drink? (RECORD NUMBER AND CIRCLE IF CANS, BOTTLES, OR GLASSES.)

	<u>NUMBER</u>	<u>CANS</u>	<u>BOTTLES</u>	<u>GLASSES</u>
a. Cola soft drinks	_____	1	2	3
b. Non-cola soft drinks	_____	1	2	3
c. Canned juices	_____	1	2	3
d. Milk	_____	1	2	3
e. Beer	_____	1	2	3
f. Wine	_____	1	2	3
g. Coffee, tea (cooked water)	_____	1	2	3
h. Tap water and tap water drinks	_____	1	2	3
i. Bottled water	_____	1	2	3

24. a. What was the usual daytime temperature in your home during the past 24 hours? _____ °F

b. What was the usual nighttime temperature in your home during the past 24 hours? _____ °F

25. a. Did any household member use any of the following cooling appliances in the past 24 hours?

IF YES:
b. In which room(s) are they located?

	<u>YES</u>	<u>NO</u>
(1) Window air conditioner?	1	2

(2) Portable circulating fan?	1	2
-------------------------------	---	---

(3) Ceiling exhaust fan?	1	2
--------------------------	---	---

(4) Central air conditioning system?	1	2
--------------------------------------	---	---

26. Were windows or outside doors opened in your home at any time during the past 24 hours?

1 Yes

2 No

27. Finally, I'd like to ask you about each one-way trip you took during the past 24 hours.

Trip #1 Trip #2 Trip #3 Trip #4

a. What mode of transportation did you use?
(e.g., auto, bus, truck, train, etc.)

b. Approximately, how long was the trip, one-way?

___ Mins. ___ Mins. ___ Mins. ___ Mins.

c. Was the traffic:
Heavy or moderate,
or light?

1	1	1	1
2	2	2	2

28. Please indicate any other event related to chemicals, for example, repairing your car engine or using cosmetics.

APPENDIX I-E

STUDY QUESTIONNAIRE FOR STUDY 6

5/4/90

California Air Resources Board
Indoor Air Quality Study

Sponsored by:

California Air Resources Board
Sacramento, California

Conducted by:

Research Triangle Institute
P.O. Box 12194
Research Triangle Park, NC 27709

STUDY QUESTIONNAIRE

The Research Triangle Institute of Research Triangle Park, North Carolina, is undertaking a research study for the California Air Resources Board to assess levels of human exposure during normal daily activities. The information recorded in this questionnaire will be held in strict confidence and will be used solely for research into the effects of environmental factors on public health. All results will be summarized for groups of people; no information about individual persons will be released without the consent of the individual. While you are not required to respond, your cooperation is needed to make the results of this survey comprehensive, accurate, and timely.

Participant ID Number:

--	--	--	--	--	--	--	--

Chemistry ID Number: (Attach Label Here)

The purpose of this questionnaire is to obtain information about you, your residence, your occupation and the environment in which you work. We are asking the same questions of each respondent in the study.

First, I would like to ask some general questions about you.

1. Sex? (by observation) 1 Male 2 Female
2. What is your date of birth? / /
 Month Day Year
3. What is the last year of school which you completed? (CIRCLE ONE)
(IF CURRENTLY IN SCHOOL, INDICATE CURRENT YEAR)
Elementary 1 2 3 4 5 6
Jr/Sr. High 7 8 9 10 11 12
College (Tech School) 13 14 15 16
Graduate 17 17+

Next, I would like to ask some questions about your residence.

4. Does YOUR HOUSE have an attached garage or a parking area underneath it?
 1 Yes 2 No (GO TO QUESTION 5)
 - a. Is there usually one or more motor vehicles parked in it for some part of each day?
 1 Yes 2 No
5. Is there insulation and/or weatherstripping between the garage and the house?
 - 1 Insulation
 - 2 Weatherstripping
 - 3 Both
 - 4 Neither
 - 5 DK

6. Do you have a gas range or oven?

1 Yes 2 No (GO TO QUESTION 7)

a. Does your gas range or oven have one or more gas pilot lights which are always lit?

1 Yes 2 No 3 Don't Know

7. Do you have a gas hot water heater?

1 Yes 2 No (GO TO QUESTION 8)

a. Does the hot water heater have a gas pilot light which is always lit?

1 Yes 2 No 3 Don't know

8. Do you have a gas clothes dryer?

1 Yes 2 No (GO TO QUESTION 9)

a. Does the gas clothes dryer have a gas pilot light which is always lit?

1 Yes 2 No 3 Don't know

b. Where is it located?

1 Room or closet inside living quarters

2 Utility room outside living quarters

3 Garage

4 Basement

5 Outside

c. How is the dryer vented?

1 Vented inside the living area (including utility room)

2 Vented to the outdoors

3 Vent can be switched to inside or outside

4 Vents to garage

5 Don't know

9a. Is your water supplied by a municipality or corporation?

1 Yes 2 No 3 Don't Know

b. Do you regularly use bottled water?

1 Yes 2 No

10a. Did you or any member of the household use insecticides, such as Raid, in the home in the past 6 months?

1 Yes 2 No (GO TO QUESTION 11)

b. In which rooms? (READ ALL RESPONSES AND CIRCLE ALL THAT APPLY.)

1 Living Room

5 Master Bedroom

2 Dining Room

6 Other Bedroom (SPECIFY WHOSE)

3 Kitchen

7 Other Room (SPECIFY)

4 Den

11a. Did you pay someone to have your home treated for pests in the past 6 months?

1 Yes 2 No (GO TO QUESTION 12)

b. About how many times in the past 6 months?

_____ Times

12. Do you have a fireplace in your home?

1 Yes 2 No

13a. Is all or part of your home carpeted?

1 All 2 Part 3 None (GO TO QUESTION 14)

- b. Other than vacuuming or carpet sweeping, when was any part of the carpet last cleaned, and what method was used?

<u>When Cleaned</u>	<u>Method Used</u>
<u> </u> Within past 30 days	1. Steam cleaned
<u> </u> Within past 30-90 days	2. Professionally dry cleaned
<u> </u> Within past 90-360 days	3. Spot cleaned or dry cleaned by resident
	4. Other <u> </u>

14. In which areas of your home do you and other household members spend most of your waking hours? (CIRCLE ALL THAT APPLY)

1) Living Room	5) Master Bedroom
2) Dining Room	6) Other Bedroom (SPECIFY WHOSE)
3) Kitchen	<u> </u>
4) Den	7) Other Room (SPECIFY
	<u> </u>

15. Do you store cleaning supplies (e.g., chlorine bleaches, detergents) in the following places?

	<u>Yes</u>	<u>No</u>	<u>DK</u>	<u>N/A</u>
Kitchen	1	2	3	4
Utility Room	1	2	3	4
Bathroom	1	2	3	4
Attached Garage	1	2	3	4
Other (SPECIFY)	1	2	3	4
<u> </u>				

16. Do you store paints, varnishes or paint thinners or removers in the following places?

	<u>Yes</u>	<u>No</u>	<u>DK</u>	<u>N/A</u>
Attached garage	1	2	3	4
Basement	1	2	3	4
Attic	1	2	3	4
Attached shop or workroom	1	2	3	4
Utility Room	1	2	3	4
Other (SPECIFY)	1	2	3	4

17. Do you store kerosene, gasoline, pesticides, insecticides, or lawn and garden chemicals in the following places?

	<u>Yes</u>	<u>No</u>	<u>DK</u>	<u>N/A</u>
Attached garage	1	2	3	4
Basement	1	2	3	4
Attic	1	2	3	4
Attached shop or workroom	1	2	3	4
Utility Room	1	2	3	4
Other (SPECIFY)	1	2	3	4

Next, I have a few questions about you and your occupation.

18. Are you currently employed?

1 Yes 2 No (GO TO QUESTION 26)

19. How many hours per day and days per week do you work during a normal work week at your primary job?

____ Hours/day ____ Days/week

20. What is your job title? _____

21. In what type of industry or business do you work? _____

22. What is the zip code for your primary work location? _____

23. How do you travel to work most often? (PROBE AND CHECK ALL THAT APPLY.)

- | | | |
|----------------|-----------------|-------------------------|
| 1 Work at home | 5 Bus | 9 Other (SPECIFY) _____ |
| 2 Walk | 6 Car, Cab, Van | _____ |
| 3 Bicycle | 7 Truck | |
| 4 Motorcycle | 8 Train | |

(GO TO QUESTION 25)

24. If not currently employed, which of the following describe your status?
(CHECK ALL THAT APPLY.)

- 1 Disabled
- 2 Looking for work
- 3 On layoff from work
- 4 Retired
- 5 Going to school
- 6 Keeping house
- 7 Other (SPECIFY) _____

25. Do you have a part-time job or work regularly as a volunteer?

- 1 Yes 2 No (GO TO 28)

26. What is your part-time or volunteer job title? _____

27. In what type of industry or business do you work part-time or as a volunteer?

28. This completes the interview. Are there any questions which you have that I can answer? (ANSWER ANY QUESTIONS AND CONTINUE) I would like to schedule the appointments for the sampling team to come to your home and set up their equipment. (SCHEDULE APPOINTMENT AND RECORD ON HEQ.) Thank you very much for your cooperation.

Interviewer #

Date of Interview --

Comments:

APPENDIX I-F

**RECORD OF ACTIVITIES AND ENVIRONMENTS
FOR STUDY 6**

RESEARCH TRIANGLE INSTITUTE
California Air Resources Board
Indoor Air Quality Study

RECORD OF ACTIVITIES AND ENVIRONMENTS

Participant Identification Number

(Attach PID Label Here)

For Further Information call:

Harvey Zelon - RTI 800-334-8571

or

Peggy Jenkins - ARB 916-323-1504

Description of Activities

THE FOLLOWING QUESTIONS ARE FOR THE PAST 24-HOUR PERIOD.

1. a. Did you spend any time at a gas station or in a parking garage or auto repair shop during the past 24 hours?

1 Yes	2 No (GO TO QUESTION 2)
-------	----------------------------
- b. How long did you spend in those places?

_____ Hrs.	_____ Mins.
------------	-------------
2. a. Did you pump or pour gasoline during the past 24 hours?

1 Yes	2 No (GO TO QUESTION 3)
-------	----------------------------
- b. Was it leaded or unleaded gasoline?

1 Leaded	2 Unleaded
----------	------------
3. a. Do you have clothes in the house that have been dry-cleaned in the past week?

1 Yes	2 No (GO TO QUESTION 4)
-------	----------------------------
- b. Did you wear any of these clothes in the past 24 hours?

1 Yes	2 No (GO TO QUESTION 4)
-------	----------------------------
4. a. Did you smoke any cigarettes during the monitoring period, that is, between (TIME) and (TIME)?

1 Yes	2 No (GO TO QUESTION 5)
-------	----------------------------
- b. About how many cigarettes did you smoke?

-------	--

5. Have you used or worked with insecticides, pesticides, or herbicides in any way, including farming or gardening in the past 24 hours?

1 Yes

2 No
(GO TO QUESTION 6)

(1) ENTER SPECIFIC PRODUCT NAME.

a. For how long did you use it?

Hrs. Mins.

b. Were you primarily

Indoors or Outdoors

(2) ENTER SPECIFIC PRODUCT NAME.

a. For how long did you use it?

Hrs. Mins.

b. Were you primarily

Indoors or Outdoors

(3) ENTER SPECIFIC PRODUCT NAME.

a. For how long did you use it?

Hrs. Mins.

b. Were you primarily

Indoors or Outdoors

6. Did you go to work today in your regular occupation?

1 Yes

2 No

3 Unemployed

Have you used or been near any of the following in the past 24 hours?

7. Paints/solvents (e.g. oil based or latex/water based paints, acetone, chloroform, toluene)?

1 Yes

2 No
(GO TO QUESTION 8)

- (1) SPECIFY THE PRODUCT NAME.
IF PAINT SPECIFY OIL OR WATER BASED.

a. For how long?

_____ Hrs. _____ Mins.

- (2) SPECIFY THE PRODUCT NAME.

a. For how long?

_____ Hrs. _____ Mins.

- (3) SPECIFY THE PRODUCT NAME.

a. For how long?

_____ Hrs. _____ Mins.

8. Vaporizing or odorous glues or adhesives?

1 Yes

2 No
(GO TO QUESTION 9)

- (1) SPECIFY THE PRODUCT NAME.

a. For how long?

_____ Hrs. _____ Mins.

- (2) SPECIFY THE PRODUCT NAME.

a. For how long?

_____ Hrs. _____ Mins.

- (3) SPECIFY THE PRODUCT NAME.

a. For how long?

_____ Hrs. _____ Mins.

Have you used or been near any of the following in the past 24 hours?

9. Moth crystals, room air freshener, or bathroom deodorizers?

1 Yes

2 No

(GO TO QUESTION 10)

- (1) SPECIFY THE PRODUCT NAME.

____ Hrs. ____ Mins.

a. For how long?

- (2) SPECIFY THE PRODUCT NAME.

____ Hrs. ____ Mins.

a. For how long?

- (3) SPECIFY THE PRODUCT NAME.

____ Hrs. ____ Mins.

a. For how long?

10. Petroleum products (e.g., gasoline, fuel oil, motor oil, kerosene, etc., excluding pumping your own gas?

1 Yes

2 No

(GO TO QUESTION 11)

- (1) SPECIFY THE PRODUCT NAME.

____ Hrs. ____ Mins.

a. For how long?

- (2) SPECIFY THE PRODUCT NAME.

____ Hrs. ____ Mins.

a. For how long?

- (3) SPECIFY THE PRODUCT NAME.

____ Hrs. ____ Mins.

a. For how long?

11. Auto/truck/lawn mower exhausts (heavy or long exposure, e.g., attached garage, tunnel, expressway)?

1 Yes

2 No

(GO TO QUESTION 12)

a. For how long?

____ Hrs. ____ Mins.

Have you used or been near any of the following in the past 24 hours?

12. Cleaning solutions (including household cleaners or chemicals)?

1 Yes

2 No
(GO TO QUESTION 13)

(1) SPECIFY THE PRODUCT NAME.

____ Hrs. ____ Mins.

a. For how long?

(2) SPECIFY THE PRODUCT NAME.

____ Hrs. ____ Mins.

a. For how long?

(3) SPECIFY THE PRODUCT NAME.

____ Hrs. ____ Mins.

a. For how long?

13. Flea collars, flea powder, or pet shampoo?

1 Yes

2 No
(GO TO QUESTION 14)

(1) SPECIFY THE PRODUCT NAME.

____ Hrs. ____ Mins.

a. For how long?

(2) SPECIFY THE PRODUCT NAME.

____ Hrs. ____ Mins.

a. For how long?

(2) SPECIFY THE PRODUCT NAME.

____ Hrs. ____ Mins.

a. For how long?

Have you used or been near any of the following in the past 24 hours?

14. Aerosol personal care products
such as hair sprays or
deodorants?

1 Yes

2 No
(GO TO QUESTION 15)

- (1) SPECIFY THE PRODUCT
NAME.

_____ Hrs. _____ Mins.

a. For how long?

- (2) SPECIFY THE PRODUCT
NAME.

_____ Hrs. _____ Mins.

a. For how long?

- (3) SPECIFY THE PRODUCT
NAME.

_____ Hrs. _____ Mins.

a. For how long?

15. Polishing or waxing agents?

1 Yes

2 No
(GO TO QUESTION 16)

- (1) SPECIFY THE PRODUCT
NAME.

_____ Hrs. _____ Mins.

a. For how long?

- (2) SPECIFY THE PRODUCT
NAME.

_____ Hrs. _____ Mins.

a. For how long?

- (3) SPECIFY THE PRODUCT
NAME.

_____ Hrs. _____ Mins.

a. For how long?

Have you used or been near any of the following in the past 24 hours?

16. Any other product that involved exposure to chemicals?

1 Yes

2 No

(GO TO QUESTION 17)

(1) SPECIFY THE PRODUCT NAME.

a. For how long?

_____ Hrs.

_____ Mins.

(2) SPECIFY THE PRODUCT NAME.

a. For how long?

_____ Hrs.

_____ Mins.

(3) SPECIFY THE PRODUCT NAME.

a. For how long?

_____ Hrs.

_____ Mins.

17. a. Did you use or were you near any barbeque or grill?

1 Yes

2 No

18. a. Did you take any showers or baths in the house or anywhere else in the past 24 hours?

1 Yes

2 No

(GO TO QUESTION 19)

b. How long did the water run?

_____ Mins.

19. a. Did anyone else take showers or baths in the house in the past 24 hours?

1 Yes

2 No

(GO TO QUESTION 20)

b. How many baths and showers were taken?

20. Was a dishwasher in use while you were in the house in the past 24 hours?

1 Yes

2 No

21. Was a clotheswasher in use in the house in the past 24 hours?

1 Yes

2 No
(GO TO QUESTION 22)

a. How many loads were washed with:

(1) hot or warm water?

_____ Loads

(2) cold water?

_____ Loads

b. Was bleach used?

1 Yes

2 No
(GO TO QUESTION 23)

c. What brand name?

22. In the past 24 hours, which of the following combustion sources were used (i.e., turned on) by anyone in your home or in attached structures, such as a garage, basement, or storage room? (CIRCLE ALL THAT APPLY.)

	<u>YES</u>	<u>NO</u>	<u>NOT SURE</u>
a. Gas cooking range or oven	1	2	3
b. Gas water heater	1	2	3
c. Gas clothes dryer	1	2	3
d. Gas space heater	1	2	3
e. Kerosene space heater	1	2	3
f. Fireplace	1	2	3
g. Wood stove	1	2	3
h. Gas furnace	1	2	3
i. Oil furnace	1	2	3
j. Other combustion appliances (SPECIFY)	1	2	3

Description of Environments

These questions are used to describe your home and work environment during the time period they were being monitored.

FOR EACH QUESTION READ ALL POSSIBLE RESPONSES.

A. HOME HEATING, VENTILATION, AND AIR CONDITIONING

1. Was any part of your home heated during this monitoring period?

1 Yes 2 No (GO TO QUESTION 2)

What source(s) of heat energy were used? (CHECK ALL THAT APPLY.)

- | | |
|---------------|------------------------|
| 1 Electricity | 5 Wood |
| 2 Gas | 6 Kerosene |
| 3 Oil | 7 Other, SPECIFY _____ |
| 4 Solar | |

What type of device was used to create the heat? (CHECK ALL THAT APPLY.)

- | | |
|--------------------|-------------------------|
| 1 Basement furnace | 8 Radiant heater |
| 2 Wall furnace | 9 Fireplace |
| 3 In-floor furnace | 10 Heat pump |
| 4 Outside furnace | 11 Fireplace insert |
| 5 Wood stove | 12 Space heater |
| 6 Kerosene stove | 13 Other, SPECIFY _____ |
| 7 Baseboard heater | |

2. Was your home air conditioned during this monitoring period?

- 1 Yes 2 No (GO TO QUESTION 3)

Was the air conditioning done by?

- 1 Central unit (GO TO (a))
 2 Window/wall units (GO TO (b))
 3 Both (COMPLETE BOTH (a) and (b))

(a) Does the central unit cool by:

- 1 Evaporation (swamp cooler)
 2 Refrigeration
 3 Unable to determine

Does the central unit:

- 1 Recirculate inside air
 2 Bring in outside air through a vent
 3 Combination
 4 Unable to determine

(b) How many window/wall units are in the home? _____

How many were used for at least 50% of the
 monitoring period? _____

3. Which of the following ventilation devices were in use during this monitoring period? (CHECK ALL THAT APPLY AND INDICATE THE NUMBER OF HOURS IN USE, OR INDICATE DON'T KNOW (DK)).

<u>Device</u>	<u>Used</u>	<u>Number of hours</u>	<u>DK</u>
Whole house fan	_____	_____	_____
Ceiling fan(s)	_____	_____	_____
Window fan(s)	_____	_____	_____
Portable room fan(s)	_____	_____	_____
Bathroom or kitchen exhaust fan(s)	_____	_____	_____
Door(s) open (natural ventilation)	_____	_____	_____
Window(s) open (natural ventilation)	_____	_____	_____
Other, SPECIFY _____	_____	_____	_____
None used	_____	_____	_____

4. Which of the following air cleaning or treating devices were in use during this monitoring period? (CHECK ALL THAT APPLY AND INDICATE THE NUMBER OF HOURS IN USE, OR INDICATE DON'T KNOW (DK)).

<u>Device</u>	<u>Used</u>	<u>Number of hours</u>
Filters in air handling system	_____	_____
Charcoal air filters	_____	_____
Electrostatic Precipitator	_____	_____
Ionizer	_____	_____
Hot steam humidifier	_____	_____
Cold air mist humidifier	_____	_____
Dehumidifier	_____	_____
None used	_____	_____

B. HOME ENVIRONMENT

- 1a. Was your stove or oven (excluding microwave ovens) in use during this monitoring period?

1 Yes 2 No (GO TO QUESTION 2)

- b. Was it used for: (CHECK ALL THAT APPLY.)

1 cooking
 2 heating the room
 3 cooking and heating
 4 some other purpose

- c. For how many minutes (total) during the period was the stove or oven turned on? _____ minutes

- 2a. Was a clothes dryer used during the monitoring period?

1 Yes 2 No (GO TO QUESTION 3) 3 No dryer present (GO TO QUESTION 3)

- b. How long was the dryer used? _____ Mins.

- c. Was the dryer vented into the house?

1 Yes 2 No 3 DK

- 3a. How many motor vehicles were parked within 50 feet of the home? _____
- b. How many of the vehicles were running while parked near the home?

- c. Indicate where each vehicle that ran was parked.

	Vehicle #1	#2	#3	#4
Attached garage/carport				
Detached garage/carport				
Driveway				
On the street				

4. Were domestic pets (cats, dogs, gerbils, birds, etc.) present in the home?

1 Yes 2 No (GO TO QUESTION 5)

How many pets? _____

5. How many cigarettes, cigars, or pipes were smoked in the home during the monitoring period?

Cigarettes _____

Cigars _____

Pipes _____

6. Indicate which of the following hobbies/activities were done by anyone in the house during the monitoring period and for how long.

Activity	Done	Time (minutes)
Gardening/yardwork		
Painting (any type)		
Woodworking		
Furniture refinishing		
Metal working (include welding and soldering)		
Model building		
Auto repair/engine repair		
Animal handling		
Other (Specify) _____		

7. Were any of the following kinds of items stored in your house or in an attached garage during the monitoring period?

	<u>Yes</u>	<u>No</u>	<u>DK</u>
(1) Gasoline and Petroleum Products (e.g., kerosene)	1	2	3
(2) Paints and Paint Products (oil-based and latex)	1	2	3
(3) Paint thinner	1	2	3
(4) Cleaners (petroleum-based, water-based, solids; e.g., laundry detergents, degreasing compound)	1	2	3
(5) Insecticides, Pesticides, Herbicides (e.g., mothballs)	1	2	3
(6) Aerosol Sprays/personal care products (e.g., hair spray, deodorants)	1	2	3
(7) Chlorine Bleach	1	2	3
(8) New interior furnishings (e.g., floor or wall coverings, furniture)	1	2	3
(9) Room Deodorizers	1	2	3
(10) Glues and Adhesives	1	2	3
(11) New Building Materials, excluding wood, concrete, sheetrock (e.g., polyurethane insulation)	1	2	3
(12) Automotive Care Products (e.g., carburetor cleaner, wax, polishes)	1	2	3
(13) Other chemicals	1	2	3

C. PERSONAL

1. Did you have to limit your activity during the monitoring period because of asthma symptoms, cold, flu or any other illness or disability?

- | | |
|--------------|---------------------|
| 1 Yes | } → GO TO SECTION D |
| 2 No | |
| 3 Don't know | |
| 4 Refused | |

2. What kind of illness or disability did you have?

- 1 Asthma or asthma symptoms
- 2 Cold
- 3 Flu
- 4 Some other illness or disability
(SPECIFY) _____
- 5 Don't know; can't say
- 6 Refused

D. ACTIVITY MODIFICATION

During the introduction to this study, we explained that one main objective was to capture data which describes what Californians routinely do. Therefore monitoring normal activity patterns is vital to assessing routine exposures. In order to estimate how much your activities were like others, we would like your best answers to the following questions.

1. Were there any activities which you decided that you had to modify as a result of your participation in this study?

1 Yes, SPECIFY _____

2 No

2. Were there any activities which you did not do as a result of your participation in this study?

1 Yes, SPECIFY _____

2 No

APPENDIX I-G

TIME AND ACTIVITY DIARY FOR STUDY 6

BEGIN TIME FOR FIRST ACTIVITY:

--	--

HOURS

:

--	--

MINUTES

AM	01
PM	05

1. What were you doing at this time yesterday?

--

Specify/Comments

2. Where were you when you were READ SELECTION FROM # 1 ABOVE?

--

Specify/Comments

3. READ ONE OF THESE QUESTIONS AS APPROPRIATE

a. Where in the house were you?

b. Where were you when you were outside the home?

c. How were you travelling?

--

Specify/Comments

4. Any (other) smokers present?

YES

01

NO

05

Specify/Comments

5. What time did you finish doing this and turn to something else?

RECORD TIME OLD ACTIVITY ENDED
(AND NEW ONE BEGAN)

--	--

HOURS

--	--

MINUTES

AM	01
PM	05

IF THIS IS THE LAST ACTIVITY OF THE MONITORING PERIOD FILL THE BOXES WITH "X":

CALIFORNIA AIR RESOURCES BOARD

INDOOR AIR STUDY

TIME AND ACTIVITY DIARY

(Hardcopy version)

PARTICIPANT ID _____

MONITORING PERIOD

BEGIN DATE: ____/____/____

BEGIN TIME: ____:____

am

pm

END DATE: ____/____/____

END TIME: ____:____

am

pm

Interviewer Name: _____

Time of Interview: ____/____/____

:

am

pm

6. What was it you did next?

☐

Specify/Comments

7. Where were you when you were READ SELECTION FROM # 6 ABOVE?

☐

Specify/Comments

8. READ ONE OF THESE QUESTIONS AS APPROPRIATE

a. Where in the house were you?

b. Where were you when you were outside the home?

c. How were you travelling?

☐

Specify/Comments

9. Any (other) smokers present?

YES

01

NO

05

Specify/Comments

10. What time did you finish doing this and turn to something else?

RECORD TIME THIS ACTIVITY ENDED
(AND NEW ONE BEGAN)

HOURS

MINUTES

AM

01

PM

05

IF THIS IS THE LAST ACTIVITY OF THE MONITORING PERIOD FILL THE BOXES WITH "Xs"

QUESTION 1 OR 6

CHOICES FOR "WHAT WERE YOU DOING AT A CERTAIN TIME?"

01 Working at main job

02 Eating a meal or snack

03 Sleeping at night

04 Travelling; in transit

00 SOMETHING ELSE - NONE OF THE ABOVE

QUESTION 2 OR 7

CHOICES FOR "WHERE WERE YOU WHEN YOU WERE DOING A SPECIFIC ACTIVITY?"

01 Home

03 Away from home

05 In transit

QUESTION 3 A OR 8 A

CHOICES FOR "WHERE IN THE HOUSE WERE YOU?"

- 01 Kitchen
- 02 Living room, family room, den
- 03 Dining room
- 04 Bathroom
- 05 Bedroom
- 06 Study or office
- 07 Garage
- 08 Basement
- 09 Utility or Laundry room
- 10 In an outside pool or spa
- 11 In the yard, on the patio, or somewhere else on the property
- 12 moving from room to room in the house

x Other SPECIFY _____

QUESTION 3 B OR 8 B

CHOICES FOR "WHERE WERE YOU WHEN YOU WERE OUTSIDE THE HOME?"

- 01 Office building, bank, post office
- 02 Industrial plant, factory
- 03 Grocery store (convenience store to supermarket)
- 04 Shopping mall or (non-grocery) store
- 05 School
- 06 Public building (Library, museum, theater)
- 07 Hospital, health care facility, or Dr's office
- 08 Restaurant
- 09 Bar, Nightclub
- 10 Church or Synagogue
- 11 Indoor gym, sports or health club
- 12 Other people's home
- 13 Auto repair shop, indoor parking garage, gas station
- 14 Park, playground, sports stadium (outdoor),
- 15 Hotel, motel
- 16 Dry Cleaners
- 17 Beauty Parlor; Barber Shop; Hairdressers
- 18 At work; no specific main location; moving among locations

x Other indoors SPECIFY: _____

z Other outdoors SPECIFY: _____

QUESTION 3 C OR 8 C

CHOICES FOR "HOW WERE YOU TRAVELLING?"

- 01 Car
- 02 Pick-up truck or van
- 03 Walking, jogging, running
- 04 Bus/train/ride STOP
- 05 Bus
- 06 Train/Rapid transit
- 07 Other truck
- 08 Airplane
- 09 Bicycle
- 10 Motorcycle, scooter
- x Other SPECIFY

APPENDIX I-H

DERIVATION OF QUEST.DAT VARIABLES FROM RESPONSES TO QUESTIONNAIRE ITEMS

VARIABLE NAMING CONVENTIONS:

ID -- Identification information not derived from questionnaire
PG -- Participant information, general time frame (a week or more)
PX -- Participant information, for day of monitoring (24-hr)
PD -- Participant information, for daytime portion of monitoring period
PN -- Participant information, for nighttime portion of monitoring period
HG -- House or household information, general time frame (a week or more)
HX -- House or household information, for day of monitoring (24-hr)

NOTE: Common variable numbers are used for similar items differing in time frame.

NOTE: Values of discrete variables are all coded as 1,2,.... Missing values are blanks.

QUESTIONNAIRE ITEMS:

Items beginning with Q refer to a Study Questionnaire.

Items beginning with E refer to a RAE.

Items beginning with EA or EB refer to parts A or B, respectively, of the Study 6 RAE.

Items labeled "Diary" were derived from the TAD.

THE FOLLOWING QUESTIONNAIRE ITEMS WERE NOT USED:

STUDY QUESTIONNAIRES:

STUDY 1, 2, 3: Items 4, 8-10, 14, 15, 16B, 18, 21A&B, 22-29, 32, and 33.

STUDY 4,5: Items 2, 3, 5, 9, and 14.

STUDY 6: Items 3, 5, 8A&B&C, 10B, 14, 17, 19-23, and 25-27.

ENVIRONMENT/ACTIVITY SURVEYS:

STUDY 1,2,3: Items 7, 9, 10.

STUDY 4,5: Items 4, 5B&C, 11, 16, 23, 24, 27, and 28.

STUDY 6: Item 10, 16, 17, A1, A4, B1-B4, and all of parts C and D.

Variable _____ Questionnaire Items from Study: _____

Name Description 1,2,3 4,5 6

Comments

RECORD IDENTIFICATION

ID1 Study Number
 ID2 Household/Participant ID
 ID3 Monitoring Date (Start of Period)
 ID4 Stratum Code
 ID5 Primary Sampling Unit Code
 ID6 Sampling Weight - Personal
 ID7 Sampling Weight - Household

Available for studies 4,5,6.
 Not applicable to studies 4,5.
 Not applicable to studies 4,5.
 Not applicable to studies 4,5.
 Applies to study 6 only.

GENERAL CHARACTERISTICS

Personal:

PG1 Sex (Male, Female) Q1 Q25 Q1
 PG2 Race (Hispanic, Native American, Non-Hispanic Black, Asian, Non-Hispanic White, Other) Q2 Q26 Q27* Q28 Q29A, Q29B*
 PG3 Age (in years) Q2 Q26 Q27* Q28 Q29A, Q29B*
 PG4 Weight (in pounds) Q3 Q26 Q27* Q28 Q29A, Q29B*
 PG5 Height (in inches) Q5 Q26 Q27* Q28 Q29A, Q29B*
 PG6 Employment Status (Employed, Housewife, Student, Unemployed, Retired, Disabled) Q6_FT, Q6_IN* Q29A, Q29B*
 Q7, Q11 Q1, Q4 Q18, Q24*
 Q34* Q20A Q13A Q9A Q11A Q13A
 Q13B1&2* Q13D Q21A Q4*
 * Reordered categories.
 * Collapsed categories.
 * Combined categories.
 * Included underneath parking.

House:

HG1 Municipal Water Supply (Y/N)
 HG2 Home Treated for Pests (Y/N)
 HG3 Home Carpeted (All, Part, None)
 HG4 Carpet Cleaning in Past Year (Steam, Prof. Dry Clean, Other, None)
 HG5 Commercial Cleaning of Drapes/ Carpets/Furniture (Y/N)
 HG6 Attached Garage (Y/N)

Questionnaire Items from Study:

Variable		Questionnaire Items from Study:			Comments
Name	Description	1,2,3	4,5	6	
HOME HVAC CHARACTERISTICS (Y/N)					
HG7	Central Air Conditioning	Q30_1	Q15_1		
HG8	Window Air Conditioning	Q30_2	Q15_2		
HG9	Portable Circulation Fans	Q30_3	Q15_3		
HG10	Ceiling Exhaust Fan	Q30_4	Q15_4		
HG11	Gas Furnace	Q31_3			
HG12	Fireplace		Q16A	Q12	* Constructed categories.
HX7	Central Air Conditioning		E25A_4	EA2, EA2_1*	* Constructed categories.
HX8	Window Air Conditioning		E25A_1	EA2, EA2_1*	* Constructed categories.
HX9	Circulation Fans		E25A_2	EA3D, EA3B*	* Combined categories.
HX10	Exhaust Fans		E25A_3	EA3A	
HX11	Gas Furnace		E22_7A	E22H	
HX12	Fireplace		E22_5A	E22F	
HX13	Window Fan			EA3C	
HX14	Bathroom/Kitchen Exhaust			EA3E	
HX15	Doors or Windows Open		E26	EA3F, EA3G*	* Combined categories.
HX16	Gas or Kerosene Space Heater		E22_4A	E22D, E22E*	* Combined categories.
HX17	Woodstove		E22_6A	E22G	
HOME APPLIANCES (Y/N)					
HG18	Gas Stove	Q31_1		Q6	
HG19	Gas Water Heater		E22_2A	Q7	
HG20	Gas Clothes Dryer			Q8	
HG21	Electric Oven	Q31_2			
HX22	Gas Stove		E22_1A	E22A	
PX7	Dishwasher		E19	E20	
PX8	Clotheswasher		E20A	E21*	* Refers to house.
PX9	Gas Clothes Dryer		E22_3A	E22C*	* Refers to house.

Questionnaire Items from Study:

Comments

1,2,3 4,5 6

Variable
Name Description

HOME STORAGE OF PRODUCTS (Y/N)

HG23 Paints/Varnishes/Thinners/Removers
HG24 Gasoline/Petroleum Products
HG25 Auto, Motorcycle, or Gas Lawnmower
HG26 -Cides or Garden/Lawn Chemicals
HG27 Cleaning Supplies
HG28 New Interior Furnishings
HG29 Room Deodorizers
HG30 Automotive Care Products

Q24A - E*
Q22A,Q22B
Q22C,D,E*
Q22F
Q23A - E*
Q16A - F*
EB7_1
Q4,Q4A*
EB7_5
Q15A - E*
EB7_8
EB7_9
EB7_12
* Collapsed categories.
* Combined categories.
* Collapsed categories.

PARTICIPANT'S OCCUPATIONS (Y/N)

PG10 Painting
PG11 Dry Cleaning
PG12 Petroleum Plant
PG13 Service Station/Garage/Engine Repair
PG14 Furniture Repair/Refinishing
PG15 Plastics Manufacture/Formulation
PG16 Textile Mill
PG17 Wood Processing Plant
PG18 Printing
PG19 Scientific Laboratory
PG20 Dye Plant
PG21 Hospital
PG22 Metal Products
PG23 Battery/Elect. Components Manufacture
PG24 Refrigerator/AC Repair/Manufacture
PG25 Taxi/Bus/Truck Driver
PG26 Pest Control
PG27 Drug Manufacture/Formulation
PG28 Photo Developing
PG29 Landscaping/Gardening
Q12_P_1
Q12_DC_1
Q12_PP_1
Q12_SS_1
Q12_F_1
Q12_PM_1
Q12_TM_1
Q12_WP_1
Q12_PR_1
Q12_SC_1
Q12_DP_1
Q12_H1
Q12_MP_1
Q12_B1
Q12_R1
Q12_TA1
Q12_PE1
Q12_DR1
Q12_PH1
Q12_LA1

Questionnaire Items from Study:

Variable		Questionnaire Items from Study:				Comments
Name	Description	1,2,3	4,5	6		
HOBBIES (Y/N)						
Participant's Hobbies:						
PG30	Painting	Q20_P_1		Q10A*		* Constructed categories.
PG31	Furniture Refinishing	Q20_F_1		Q10B*		* Constructed categories.
PG32	Model Building	Q20_S_1		Q10C*		* Constructed categories.
PG33	Gardening	Q20_G_1		Q10D*		* Constructed categories.
PG34	House Plants			Q10E*		* Constructed categories.
PG35	Automobile or Bicycle Repair			Q10F*		* Constructed categories.
Household Hobbies:						
HG31	Painting	Q20_P_1 & 2		Q10A*	EB6B**	* Constructed categories. ** Pertains to Monitoring Day.
HG32	Furniture Refinishing	Q20_F_1 & 2		Q10B*	EB6D**	* Constructed categories. ** Pertains to Monitoring Day.
HG33	Model Building	Q20_S_1 & 2		Q10C*	EB6F**	* Constructed categories. ** Pertains to Monitoring Day.
HG34	Gardening	Q20_G_1 & 2		Q10D*	EB6A**	* Constructed categories. ** Pertains to Monitoring Day.
HG35	House Plants			Q10E*		* Constructed categories.
HG36	Automobile/Mechanical Repair			Q10F*	EB6G**	* Constructed categories. ** Pertains to Monitoring Day.
EXPOSURE TO SMOKING						
PG36	Smoking Status (Current Smoker, Former Smoker, Never Smoked)	Q13		Q6		
PG37	Avg. No. Cigarettes/Day (<10, 10-30, >30)	Q13, Q16A		Q6, Q7A		
HG37	HH Members Smoke Cigarettes (Participant Only, Others Only, Both, Neither)	Q13, Q17*		Q6, Q8A*		* Constructed categories.

Questionnaire Items from Study:

Variable Name	Description	1,2,3	4,5	6	Comments
EXPOSURE TO SMOKING (continued)					
PG38	Avg. Hrs/Day Enclosed w/Smoker-Home (0, 1-5, 6-10, >10)	Q19AHOME			
PG39	Avg. Hrs/Day Enclosed w/Smoker-Work (0, 1-5, 6-10, >10)	Q19AWORK			
HX38	No. Cigarettes Smoked in House			EB5A, EB5B, EB5C*	* Added over item responses.
HX39	No. Cigarettes, Cigars, or Pipefuls			EB5A, EB5B, EB5C*	** Cigarettes only. * Constructed categories.
HG40	Tobacco Prod. Smoked in House (Y/N)	Q13, Q17**, *	Q6, Q8A**, *	E4B	* Added over day & night.
PX40	No. Cigarettes Smoked		E3B, E3D*		
PD40	No. Cigarettes Smoked - Daytime		E3D		
PN40	No. Cigarettes Smoked - Nighttime		E3B		
PX41	Smoked Tobacco Products (Y/N)	E3	E3A&C, E4A&B	E4A*	* Cigarettes only.
PD41	Smoked Tobacco Products - Day (Y/N)	E3, E3A*	E3C**		* Constructed categories.
PN41	Smoked Tobacco Products - Night (Y/N)	E3, E3A*	E3A**		** Cigarettes only.
PX42	Enclosed Area w/Smoker(s) (Y/N)	E4	E5A	Diary**	* Constructed categories. ** Yes if PX43+PX44+PX45>1%.
PD42	Enclosed Area w/Smokers - Day (Y/N)	E4, E4A*			* Constructed categories.
PN42	Enclosed Area w/Smokers - Night (Y/N)	E4, E4A*			* Constructed categories.
PX43	Percent of Monitoring Period:				
PX44	Indoors at Home with Smokers			Diary	
PX45	Indoors Not at Home with Smokers			Diary	
	Enclosed in Transit with Smokers			Diary	

Questionnaire Items from Study:

Variable Name	Description	1,2,3	4,5	6	Comments
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PERSONAL EXPOSURES (Y/N):

[NOTE: Some PG variables refer to a week]

HG41	Pesticides in Home		Q12A E2A	Q10A E3A	
HG42	Drycleaned Clothes in Home		Q17A, Q18A, Q19		
HG43	Mothballs/Crystals Indoor Air		E17A, E18A*	E18A, E19A*	* Combined categories.
	Fresheners, Bathroom Deodorizers		Q11*		* Outdoors only.
HX44	Shower/Bath	Q21	E6	E5	
PG46	Work with -cides	E5			
PX47	Insecticides, Pesticides, Herbicides		E1A	E1A	
PX48	Gas Station/Parking Garage/Auto		E1D**	E2A	
	Repair Shop		E1D**		
PX49	Pumped Gas	E1			* Constructed categories.
PD49	Pumped Gas - daytime	E1, E1A*			** Assigned times to periods.
PN49	Pumped Gas - nighttime	E1, E1A*			
PX50	Drycleaning	E2			
PD50	Drycleaning - daytime	E2, E2A*			* Constructed categories.
PN50	Drycleaning - nighttime	E2, E2A*			* Constructed categories.
PX51	Wear Drycleaned Clothes				
PX52	Paints/Solvents	E8_2*	E2B E8	E3B E7	* Solvents only.
PX53	Odorous Chemicals (Incl. Mothballs)	E8_4			
PX54	Mothballs/Crystals, Indoor Air				
	Fresheners, Bathroom Deodorizers		E10 E9	E9 E8	
PX55	Odorous, vaporizing glues/adhesives				
PX56	Toxic or Hazardous Chemicals	E8_6			
PX57	Auto/Truck Exhaust	E8_10			
PX58	Cleaning Solutions	E8_12	E12 E13	E11 E12	
PX59	Degreasing Compounds	E8_14			
PG52	Solvents	E8_1			
PG53	Odorous Chemicals (Incl. Mothballs)	E8_3			
PG56	Toxic or Hazardous Chemicals	E8_5			
PG57	Auto/Truck Exhaust	E8_9			
PG58	Cleaning Solutions	E8_11			
PG59	Degreasing Compounds	E8_13			

Variable		Questionnaire Items from Study:				Comments
Name	Description	1,2,3	4,5	6		
PERSONAL EXPOSURES (Y/N) (continued):						
PX60	Flea Collars, Powder, Pet Shampoo		E14	E13		
PX61	Aerosol Personal Care Products		E15, E15 1SP, E15 2SP*	E14		
PX62	Polishing/Waxing Agents		E15, E15 1SP, E15 2SP*, **	E15	* Created categories. * Created categories. ** Aerosols only.	
PX63	Shower/Bath		E17A	E18A		
PG64	Drink Municipal Water	Q34*	Q20A, Q20B*		* Collapsed categories.	
PG65	Drink Bottled Water		Q20C	Q9B		
MICROENVIRONMENTS						
PX66	Worked at Regular occupation (Y/N/Unemployed)		E7A	E6		
PG67	Avg. Percent of Day Spent:					
PG68	Away from Home - Weekday	E6AWKDY*			* Converted hrs/day to %.	
	Outdoors - Weekday	E6BWKDY & E6CWKDY*			* Converted hrs/day to %.	
PG69	In Motor Vehicle - Weekday	E6DWKDY*			* Converted hrs/day to %.	
PG70	Away from Home - Weekend Day	E6AWKND*			* Converted hrs/day to %.	
PG71	Outdoors - Weekend Day	E6BWKND & E6CWKND*			* Converted hrs/day to %.	
PG72	In Motor Vehicle - Weekend Day	E6DWKND*			* Converted hrs/day to %.	
Percent of Monitoring Period Spent:						
PX73	Indoors at Home		E21A*	Diary*	* Converted hrs/day to %.	
PX74	Indoors at Work (not at home)		E21B*	Diary*	* Converted hrs/day to %.	
PX75	Indoors Not at Work (not at home)		E21C*	Diary*	* Converted hrs/day to %.	
PX76	Outdoors at Work		E21D*	Diary*	* Converted hrs/day to %.	
PX77	Outdoors Not at Work		E21E*	Diary*	* Converted hrs/day to %.	
PX78	Indoors Not at Home		E21B, E21C*	Diary*	* Converted hrs/day to %.	
PX79	Outdoors			Diary*	* Converted hrs/day to %.	
PX80	Enclosed in Transit			Diary*	* Converted hrs/day to %.	

APPENDIX I-I

SAS PROGRAM FOR CREATING QUESTIONNAIRE DATA FILE


```

*****
*   THIS FILE CREATES THE QUESTIONNAIRE VARIABLES   *
*   QUEST.SAS                                       *
*****;

```

```

OPTIONS LS=80;

```

```

LIBNAME IN1 V5 'RLPTEAM$DISK:[RLPTEAM.FINAL.CALI]';
LIBNAME IN2 V5 'RLPTEAM$DISK:[RLPTEAM.FINAL.CALII]';
LIBNAME IN3 'RLPCARB$DISK:[RLPCARB.FINAL]';
LIBNAME IN4 'RLPCARB$DISK:[RLPCARB.HUI]';
LIBNAME IN5 'RLPCARB$DISK:[RLPCARB]';

```

```

/*STUDY QUESTIONNAIRE FOR STUDIES 1, 2, AND 3 */
DATA QUEST1(RENAME=(Q1=PG1 Q2=PG2 Q3=PG3 Q5=PG4 Q13=PG36
    Q19AHOME=PG38 Q19AWORK=PG39 Q21=PG46)); SET IN1.QUEST;

```

```

IF Q5=1 THEN Q5=.;
PG5=Q6 FT*12+Q6 IN;
IF Q7 =1 THEN PG6=1;
    ELSE PG6=Q11+1;
IF Q34=1 THEN PG64=1;
    ELSE IF Q34=2 OR Q34=3 THEN PG64=2;
IF Q34=1 OR Q34=2 THEN HG1=1;
    ELSE IF Q34=3 THEN HG1=2;

```

```

IF Q30_1=1 THEN HG7=1; ELSE HG7=2;
IF Q30_2=2 THEN HG8=1; ELSE HG8=2;
IF Q30_3=3 THEN HG9=1; ELSE HG9=2;
IF Q30_4=4 THEN HG10=1; ELSE HG10=2;

```

```

IF Q31_3=3 THEN HG11=1; ELSE HG11=2;
IF Q31_1=1 THEN HG18=1; ELSE HG18=2;
IF Q31_2=2 THEN HG21=1; ELSE HG21=2;

```

```

IF Q12_P_1=1 THEN PG10=1; ELSE PG10=2;
IF Q12_DC_1=1 THEN PG11=1; ELSE PG11=2;
IF Q12_PP_1=1 THEN PG12=1; ELSE PG12=2;
IF Q12_SS_1=1 THEN PG13=1; ELSE PG13=2;
IF Q12_F_1=1 THEN PG14=1; ELSE PG14=2;
IF Q12_PM_1=1 THEN PG15=1; ELSE PG15=2;
IF Q12_TM_1=1 THEN PG16=1; ELSE PG16=2;
IF Q12_WP_1=1 THEN PG17=1; ELSE PG17=2;
IF Q12_PR_1=1 THEN PG18=1; ELSE PG18=2;
IF Q12_SC_1=1 THEN PG19=1; ELSE PG19=2;
IF Q12_DP_1=1 THEN PG20=1; ELSE PG20=2;
IF Q12_H1=1 THEN PG21=1; ELSE PG21=2;
IF Q12_MP_1=1 THEN PG22=1; ELSE PG22=2;
IF Q12_B1=1 THEN PG23=1; ELSE PG23=2;

```

```

IF Q12_R1=1 THEN PG24=1; ELSE PG24=2;
IF Q12_TA1=1 THEN PG25=1; ELSE PG25=2;
IF Q12_PE1=1 THEN PG26=1; ELSE PG26=2;
IF Q12_DR1=1 THEN PG27=1; ELSE PG27=2;
IF Q12_PH1=1 THEN PG28=1; ELSE PG28=2;
IF Q12_LA1=1 THEN PG29=1; ELSE PG29=2;

```

```

IF Q20_P_1=1 THEN PG30=1; ELSE PG30=2;
IF Q20_F_1=1 THEN PG31=1; ELSE PG31=2;
IF Q20_S_1=1 THEN PG32=1; ELSE PG32=2;
IF Q20_G_1=1 THEN PG33=1; ELSE PG33=2;

```

```

IF Q20_P_1=1 OR Q20_P_2=2 THEN HG31=1; ELSE HG31=2;
IF Q20_F_1=1 OR Q20_F_2=2 THEN HG32=1; ELSE HG32=2;
IF Q20_S_1=1 OR Q20_S_2=2 THEN HG33=1; ELSE HG33=2;
IF Q20_G_1=1 OR Q20_G_2=2 THEN HG34=1; ELSE HG34=2;

```

```

IF Q13=1 THEN PG37=Q16_A; ELSE PG37=0;

```

```

IF Q13=1 AND Q17=2 THEN HG37=1;
ELSE IF Q13 NE 1 AND Q17=1 THEN HG37=2;
ELSE IF Q13=1 AND Q17=1 THEN HG37=3;
ELSE IF Q13 NE 1 AND Q17=2 THEN HG37=4;
IF Q13=1 OR Q17=1 THEN HG40=1;
ELSE IF Q13 NE 1 AND Q17=2 THEN HG40=2;

```

```

KEEP Q1 Q2 Q3 Q5 Q13 Q19AHOME Q19AWORK Q21 STUDY_ID PG5-PG6 HG1
HG7-HG11 HG18 HG21 PG10-PG33 HG31-HG34 PG37-HG37
HG40 PG64;

```

```

PROC SORT; BY STUDY_ID;

```

```

/* RECORD OF ACTIVITIES AND ENVIRONMENTS FOR STUDIES 1, 2, AND 3 */
DATA SCREEN1 (RENAME=(Q3=PX41 Q4=PX42 Q5=PX47 Q1=PX49 Q2=PX50));
SET IN1.SCREENER;

```

```

IF Q3A=2 OR Q3A=3 THEN PD41=1; ELSE IF Q3=2 OR Q3A=1 THEN PD41=2;
IF Q3A=1 OR Q3A=3 THEN PN41=1; ELSE IF Q3=2 OR Q3A=2 THEN PN41=2;
IF Q4A=2 OR Q4A=3 THEN PD42=1; ELSE IF Q4=2 OR Q4A=1 THEN PD42=2;
IF Q4A=1 OR Q4A=3 THEN PN42=1; ELSE IF Q4=2 OR Q3A=2 THEN PN42=2;
IF Q1A=2 OR Q1A=3 THEN PD49=1; ELSE IF Q1=2 OR Q1A=1 THEN PD49=2;
IF Q1A=1 OR Q1A=3 THEN PN49=1; ELSE IF Q1=2 OR Q1A=2 THEN PN49=2;
IF Q2A=2 OR Q2A=3 THEN PD50=1; ELSE IF Q2=2 OR Q2A=1 THEN PD50=2;
IF Q2A=1 OR Q2A=3 THEN PN50=1; ELSE IF Q2=2 OR Q2A=2 THEN PN50=2;

```

```

IF Q8_2=2 THEN PX52=1; ELSE PX52=2;
IF Q8_4=4 THEN PX53=1; ELSE PX53=2;
IF Q8_6=6 THEN PX56=1; ELSE PX56=2;
IF Q8_10=10 THEN PX57=1; ELSE PX57=2;
IF Q8_12=12 THEN PX58=1; ELSE PX58=2;

```

IF Q8_14=14 THEN PX59=1; ELSE PX59=2;

IF Q8_1=1 THEN PG52=1; ELSE PG52=2;

IF Q8_3=3 THEN PG53=1; ELSE PG53=2;

IF Q8_5=5 THEN PG56=1; ELSE PG56=2;

IF Q8_9=9 THEN PG57=1; ELSE PG57=2;

IF Q8_11=11 THEN PG58=1; ELSE PG58=2;

IF Q8_13=13 THEN PG59=1; ELSE PG59=2;

Q6TWKDY=Q6AWKDY+Q6BWKDY+Q6CWKDY+Q6DWKDY;

PG67=ROUND(Q6AWKDY*100/Q6TWKDY, .01);

PG68=ROUND((Q6BWKDY+Q6CWKDY)*100/Q6TWKDY, .01);

PG69=ROUND(Q6DWKDY*100/Q6TWKDY, .01);

Q6TWKND=Q6AWKND+Q6BWKND+Q6CWKND+Q6DWKND;

PG70=ROUND(Q6AWKND*100/Q6TWKND, .01);

PG71=ROUND((Q6BWKND+Q6CWKND)*100/Q6TWKND, .01);

PG72=ROUND(Q6DWKND*100/Q6TWKND, .01);

IF SITE=5 THEN STUDY=TRIP;

ELSE IF SITE=6 THEN STUDY=3;

KEEP Q3 Q4 Q5 Q1 Q2 PD41 PN41 PD42 PN42 PD49 PN49 PD50 PN50

PX52 PX53 PX56 PX57-PX59 PG52 PG53 PG56 PG57-PG59 PG67-PG72

STUDY_ID STUDY;

PROC SORT; BY STUDY_ID;

DATA STUDY1; MERGE QUEST1 SCREEN1;

BY STUDY_ID;

PROC SORT; BY STUDY_ID STUDY;

DATA FFF; SET IN4.DAYNITE;

IF STUDY LE 3;

KEEP STUDY_ID STUDY PART_ID;

PROC SORT; BY STUDY_ID STUDY;

DATA FFF; SET FFF;

BY STUDY_ID STUDY;

IF FIRST.STUDY;

DATA WEIGHT1; SET IN1.CHEMDATA;

IF MEDIA='WV' AND COMP=2;

IF SITE=5 THEN STUDY=TRIP;

ELSE IF SITE=6 THEN STUDY=3;

KEEP STUDY STUDY_ID WEIGHT STRATUM PSU;

PROC SORT; BY STUDY_ID STUDY;

```
DATA STUDY1;  MERGE STUDY1(IN=INS) FFF WEIGHT1;
BY STUDY_ID STUDY;
IF INS;
```

```
PROC CONTENTS DATA=STUDY1;
```

```
    /* STUDY QUESTIONNAIRE FOR STUDY 4 */
DATA QUEST2 (RENAME=(Q25=PG1 Q26=PG2 Q28=PG4 Q13A=HG2
                    Q11=PG46 Q13E=HG5 Q21A=HG6 Q16A=HG12 Q6=PG36
                    Q12A=HG41 Q20C=PG65));
    /* Q13E IN DATA FILE IS Q13D IN QUESTIONNAIRE */
    SET IN2.QUEST1;
STUDY=4;
B_YEAR=Q27-FLOOR(Q27/100)*100;
B_MON=FLOOR(Q27/10000);
B_DAY=FLOOR((Q27-B_MON*10000)/100);
I_YEAR=DATE-FLOOR(DATE/100)*100;
I_MON=FLOOR(DATE/10000);
I_DAY=FLOOR((DATE-I_MON*10000)/100);
IF I_MON LT B_MON THEN PG3=I_YEAR-B_YEAR-1;
ELSE IF I_MON GT B_MON THEN PG3=I_YEAR-B_YEAR;
ELSE IF I_MON=B_MON THEN DO;
    IF I_DAY GE B_DAY THEN PG3=I_YEAR-B_YEAR;
    IF I_DAY LT B_DAY THEN PG3=I_YEAR-B_YEAR-1;  END;

PG5=Q29A*12+Q29B;
IF Q1=1 THEN PG6=1;
ELSE PG6=Q4+1;
IF Q20A NE 8 THEN HG1=Q20A;
IF Q15_1=1 THEN HG7=1; ELSE HG7=2;
IF Q15_2=1 THEN HG8=1; ELSE HG8=2;
IF Q15_3=1 THEN HG9=1; ELSE HG9=2;
IF Q15_4=1 THEN HG10=1; ELSE HG10=2;

IF Q24A=1 OR Q24C=1 OR Q24E=1 OR Q24G=1 OR Q24I=1 THEN HG23=1;
ELSE HG23=2;
IF Q22=1 OR Q22A=1 THEN HG24=1; ELSE HG24=2;
IF Q22B=1 OR Q22C=1 OR Q22D=1 THEN HG25=1; ELSE HG25=2;
IF Q22E=1 THEN HG26=1; ELSE HG26=2;
    /* Q22, Q22A, ... , Q22D IN DATA FILE ARE
       Q22A, Q22B, ... , Q22E IN QUESTIONNAIRE */
IF Q23A=1 OR Q23C=1 OR Q23E=1 OR Q23G=1 OR Q23I=1 THEN HG27=1;
ELSE HG27=2;

IF Q10A=1 OR Q10A=3 THEN PG30=1; ELSE PG30=2;
IF Q10B=1 OR Q10B=3 THEN PG31=1; ELSE PG31=2;
IF Q10C=1 OR Q10C=3 THEN PG32=1; ELSE PG32=2;
IF Q10D=1 OR Q10D=3 THEN PG33=1; ELSE PG33=2;
```



```
IF Q10E=1 OR Q10E=3 THEN PG34=1; ELSE PG34=2;
IF Q10F=1 OR Q10F=3 THEN PG35=1; ELSE PG35=2;
```

```
IF 1 LE Q10A LE 3 THEN HG31=1; ELSE HG31=2;
IF 1 LE Q10B LE 3 THEN HG32=1; ELSE HG32=2;
IF 1 LE Q10C LE 3 THEN HG33=1; ELSE HG33=2;
IF 1 LE Q10D LE 3 THEN HG34=1; ELSE HG34=2;
IF 1 LE Q10E LE 3 THEN HG35=1; ELSE HG35=2;
IF 1 LE Q10F LE 3 THEN HG36=1; ELSE HG36=2;
```

```
IF Q6=1 THEN DO; IF Q7A=1 THEN PG37=1;
ELSE IF 2 LE Q7A LE 3 THEN PG37=2;
ELSE IF 4 LE Q7A LE 5 THEN PG37=3; END;
ELSE IF 2 LE Q6 LE 3 THEN PG37=0;
```

```
IF Q6=1 AND Q8A=2 THEN HG37=1;
ELSE IF Q6 NE 1 AND Q8A=1 THEN HG37=2;
ELSE IF Q6=1 AND Q8A=1 THEN HG37=3;
ELSE IF Q6 NE 1 AND Q8A=2 THEN HG37=4;
IF Q6=1 OR Q8A=1 THEN HG40=1; ELSE HG40=2;
IF Q17A=1 OR Q18A=1 OR Q19=1 THEN HG43=1; ELSE HG43=2;
IF Q20A=1 AND 1 LE Q20B LE 3 THEN PG64=1;
ELSE IF Q20A=2 OR Q20B=4 THEN PG64=2;
KEEP Q25 Q26 Q28 HG1 Q13A Q13E Q21A Q16A Q6 Q12A Q11 Q20C STUDY_ID
STUDY PG3 PG5 PG6 HG7-HG10 HG23-HG27 PG30-PG35 HG31-HG36
HG37 PG37 HG40 HG43 PG64;
```

```
PROC SORT; BY STUDY_ID STUDY;
```

```
/* RECORD OF ACTIVITIES AND ENVIRONMENTS FOR STUDIES 4 AND 5 */
DATA SCREEN2; SET IN2.SCREENER;
STUDY=TRIP+1;
```

```
HX7=INPUT(Q25A_4, 2.);
HX8=INPUT(Q25A_1, 2.);
HX9=INPUT(Q25A_2, 2.);
HX10=INPUT(Q25A_3, 2.);
HX11=INPUT(Q22_7A, 2.);
HX12=INPUT(Q22_5A, 2.);
HX15=INPUT(Q26, 2.);
HX16=INPUT(Q22_4A, 2.);
HX17=INPUT(Q22_6A, 2.);
HG19=INPUT(Q22_2A, 2.);
HX22=INPUT(Q22_1A, 2.);
PX7=INPUT(Q19, 2.);
PX8=INPUT(Q20A, 2.);
PX9=INPUT(Q22_3A, 2.);
IF Q3B NE '99' THEN PN40=INPUT(Q3B, 2.); ELSE PN40=0;
```

```

IF Q3D NE '99' AND Q3D NE '98' THEN PD40=INPUT(Q3D, 2.);
ELSE IF Q3C='02' THEN PD40=0;
PX40=PD40+PN40;

IF Q3A='01' OR Q3C='01' OR Q4A='01' OR Q4B='01' THEN PX41=1;
ELSE IF Q3A='02' AND Q3C='02' AND Q4A='02' AND Q4B='02' THEN PX41=2;

IF Q3C='01' THEN PD41=1; ELSE IF Q3C='02' THEN PD41=2;
IF Q3A='01' THEN PN41=1; ELSE IF Q3A='02' THEN PN41=2;
PX42=INPUT(Q5A,2.);
HG42=INPUT(Q2A, 2.);
IF Q17A='01' OR Q18A='01' THEN HX44=1;
ELSE HX44=2;
PX47=INPUT(Q6,2.);
PX49=INPUT(Q1A,2.);
IF TRIP_ID=712539 OR TRIP_ID=712760 OR TRIP_ID=712828 OR
TRIP_ID=712943 OR TRIP_ID=722595 OR TRIP_ID=722702 OR
TRIP_ID=722827 THEN PN49=1; ELSE PN49=2;
IF TRIP_ID=712950 OR TRIP_ID=722678 OR TRIP_ID=722884 THEN PD49=1;
ELSE PD49=2;
IF TRIP_ID=712521 THEN DO; PD49=.; PN49=.; END;

IF Q2B='01' THEN PX51=1; ELSE PX51=2;
PX52=INPUT(Q8,2.);
PX54=INPUT(Q10,2.);
PX55=INPUT(Q9,2.);
PX57=INPUT(Q12,2.);
PX58=INPUT(Q13,2.);
PX60=INPUT(Q14,2.);
IF Q15='01' AND (TRIP_ID NE 712760 AND TRIP_ID NE 712539)
THEN PX61=1; ELSE PX61=2;
IF Q15='01' AND (TRIP_ID=712919 OR TRIP_ID=712760 OR TRIP_ID=712539)
THEN PX62=1; ELSE PX62=2;

PX63=INPUT(Q17A,2.);
PX66=INPUT(Q7A,2.);

E21A=INPUT(Q21A,2.);
E21B=INPUT(Q21B,2.);
E21C=INPUT(Q21C,2.);
E21D=INPUT(Q21D,2.);
E21E=INPUT(Q21E,2.);
IF Q21_TOT NE '95' THEN E21TOT=INPUT(Q21_TOT,2.);

PX73=ROUND(100*E21A/E21TOT, .01);
PX74=ROUND(100*E21B/E21TOT, .01);
PX75=ROUND(100*E21C/E21TOT, .01);
PX76=ROUND(100*E21D/E21TOT, .01);

```

```
PX77=ROUND(100*E21E/E21TOT, .01);
PX78=ROUND(100*(E21B+E21C)/E21TOT, .01);
```

```
I_YEAR=INPUT(DATE_YR,2.);
I_MON=INPUT(DATE_MO,2.);
I_DAY=INPUT(DATE_DAY,2.);
COLLDATE=MDY(I_MON,I_DAY,I_YEAR);
```

```
KEEP STUDY_ID STUDY HX7-HX12 HX15-HX17 HG19 HX22 PX7-PX9 PX40-PX42
      HG42 HX44 PX47 PX49 PD49 PN49 PD40 PN40 PD41 PN41 PX51 PX52 PX54
      PX55 PX57 PX58 PX60-PX62 PX63 PX66 PX73-PX78 COLLDATE;
```

```
PROC SORT; BY STUDY STUDY_ID;
```

```
DATA XXX; SET IN2.SCREENER;
STUDY=TRIP+1;
IF STUDY=5;
KEEP STUDY_ID DATE_DAY DATE_MO DATE_YR;
```

```
PROC SORT; BY STUDY_ID;
```

```
/* STUDY QUESTIONNAIRE FOR STUDY 5 */
DATA QUEST3; SET IN2.QUEST2;
```

```
PROC SORT; BY STUDY_ID;
```

```
DATA QUEST3; MERGE QUEST3(IN=INQ) QUEST2 XXX;
BY STUDY_ID;
IF INQ;
```

```
/* WITH A FEW EXCEPTIONS AT THE BEGINNING WHERE THEY ARE THE SAME
   THE QUESTION NUMBERS IN STUDY 5 ARE OFF BY ONE FROM THOSE IN 4 */
DATA QUEST3; SET QUEST3;
STUDY=5;
/* THESE ARE THE QUESTIONS EVERYONE ANSWERED */
PG1=Q24;
```

```
B_YEAR=Q26C-1900;
B_MON=Q26A;
B_DAY=Q26B;
I_YEAR=INPUT(DATE_YR,2.);
I_MON=INPUT(DATE_MO,2.);
I_DAY=INPUT(DATE_DAY,2.);
IF I_MON LT B_MON THEN PG3=I_YEAR-B_YEAR-1;
ELSE IF I_MON GT B_MON THEN PG3=I_YEAR-B_YEAR;
ELSE IF I_MON=B_MON THEN DO;
  IF I_DAY GE B_DAY THEN PG3=I_YEAR-B_YEAR;
  IF I_DAY LT B_DAY THEN PG3=I_YEAR-B_YEAR-1; END;
```

```
PG36=Q5;
IF Q5=1 THEN DO; IF Q6A=1 THEN PG37=1;
    ELSE IF 2 LE Q6A LE 3 THEN PG37=2;
    ELSE IF 4 LE Q6A LE 5 THEN PG37=3; END;
ELSE IF 2 LE Q5 LE 3 THEN PG37=0;
```

```
IF Q5=1 AND Q7A=2 THEN HG37=1;
ELSE IF Q5 NE 1 AND Q7A=1 THEN HG37=2;
ELSE IF Q5=1 AND Q7A=1 THEN HG37=3;
ELSE IF Q5 NE 1 AND Q7A=2 THEN HG37=4;
IF Q5=1 OR Q7A=1 THEN HG40=1; ELSE HG40=2;
```

```
/* THIS QUESTION WAS ANSWERED ONLY IF IT CHANGED */
IF Q1A NE . THEN DO;
    IF Q1A=1 THEN PG6=1;
    ELSE PG6=Q3+1; END;
```

```
/* THESE QUESTIONS WERE ANSWERED ONLY BY NEW PARTICIPANTS */
IF Q29=2 THEN DO;
    PG2=Q25;
    PG4=Q27;
```

```
PG5=Q28A*12+Q28B;
IF Q19A=1 THEN HG1=1;
    ELSE IF Q19A=2 THEN HG1=2;
    ELSE HG1=.;
HG2=Q13A;
HG5=Q13E;
IF Q20A=8 THEN HG6=.;
    ELSE HG6=Q20A;
```

```
IF Q23A=1 OR Q23C=1 OR Q23E=1 OR Q23G=1 OR Q23I=1 THEN HG23=1;
ELSE IF Q23A=2 AND Q23C=2 AND Q23E=2 AND Q23G=2 AND Q23I=2 THEN HG23=2;
IF Q21=1 OR Q21A=1 THEN HG24=1;
    ELSE IF Q21=2 AND Q21A=2 THEN HG24=2;
IF Q21B=1 OR Q21C=1 OR Q21D=1 THEN HG25=1;
    ELSE IF Q21B=2 AND Q21C=2 AND Q21D=2 THEN HG25=2;
IF Q21E=1 THEN HG26=1; ELSE IF Q21E=2 THEN HG26=2;
IF Q22A=1 OR Q22C=1 OR Q22E=1 OR Q22G=1 OR Q22I=1 THEN HG27=1;
    ELSE IF Q22A=2 AND Q22C=2 AND Q22E=2 AND Q22G=2 AND Q22I=2 THEN HG27=2;
IF Q14B=1 OR Q14C=1 OR Q14G=1 THEN HG28=1;
    ELSE HG28=2;
IF Q10A=1 OR Q10A=3 THEN PG30=1; ELSE PG30=2;
IF Q10B=1 OR Q10B=3 THEN PG31=1; ELSE PG31=2;
IF Q10C=1 OR Q10C=3 THEN PG32=1; ELSE PG32=2;
IF Q10D=1 OR Q10D=3 THEN PG33=1; ELSE PG33=2;
IF Q10E=1 OR Q10E=3 THEN PG34=1; ELSE PG34=2;
IF Q10F=1 OR Q10F=3 THEN PG35=1; ELSE PG35=2;
```

```

IF 1 LE Q10A LE 3 THEN HG31=1; ELSE HG31=2;
IF 1 LE Q10B LE 3 THEN HG32=1; ELSE HG32=2;
IF 1 LE Q10C LE 3 THEN HG33=1; ELSE HG33=2;
IF 1 LE Q10D LE 3 THEN HG34=1; ELSE HG34=2;
IF 1 LE Q10E LE 3 THEN HG35=1; ELSE HG35=2;
IF 1 LE Q10F LE 3 THEN HG36=1; ELSE HG36=2;

```

```

HG41=Q12A;
PG46=Q11;

```

```

IF Q16A=1 OR Q17A=1 OR Q18=1 THEN HG43=1;
ELSE IF Q16A=2 AND Q17A=2 AND Q18=2 THEN HG43=2;
IF Q19A=1 AND 1 LE Q19B LE 3 THEN PG64=1;
ELSE IF Q19A=2 OR Q19B=4 THEN PG64=2;
IF Q19C=1 OR Q19C=2 THEN PG65=Q19C; END;
KEEP STUDY ID STUDY PG1-PG6 HG1-HG2 HG5-HG10 HG12 HG23-HG27 PG30-PG37
HG31-HG37 PG36 HG37 PG37 HG40 HG41 HG43 PG46 PG64 PG65;

```

```

DATA QUEST2; SET QUEST2 QUEST3;

```

```

PROC SORT; BY STUDY STUDY_ID;

```

```

DATA FFF2; SET IN4.DAYNITE;
IF 4 LE STUDY LE 5;
KEEP STUDY_ID STUDY PART_ID;

```

```

PROC SORT; BY STUDY_ID STUDY;

```

```

DATA FFF2; SET FFF2;
BY STUDY_ID STUDY;
IF FIRST.STUDY;

```

```

PROC SORT; BY STUDY STUDY_ID;

```

```

DATA STUDY2; MERGE QUEST2 SCREEN2 FFF2;
BY STUDY STUDY_ID;

```

```

PROC CONTENTS DATA=STUDY2;

```

```

/* STUDY QUESTIONNAIRE FOR STUDY 6 */
DATA QUEST6; SET IN3.STUDY;
PSU=INPUT(SEGNO, 2.);
KEEP Q1 Q4 Q6 Q7 Q8 Q12 Q18 Q10A Q11A Q13A Q13B1 Q13B2 Q15A Q15B
Q15C Q15D Q15E Q16A Q16B Q16C Q16D Q16E Q16F Q24_1-Q24_7
Q2M Q2D Q2Y Q4A Q9A Q9B HOUSE_ID ID8 PSU STRATUM WEIGHT;

```

```

PROC SORT; BY HOUSE_ID;

```

```

DATA SSS; SET IN3.CARBDATA;
COLLDATE=DATE_COL;
IF DATE_COL=. THEN DATE_COL=11118;
KEEP HOUSE_ID COLLDATE DATE_COL;

PROC SORT; BY HOUSE_ID;

DATA SSS; SET SSS;
BY HOUSE_ID;
IF FIRST.HOUSE_ID;

DATA QUEST6; MERGE QUEST6(IN=INQ) SSS;
BY HOUSE_ID;
IF INQ;

DATA QUEST6(RENAME=(Q1=PG1 Q11A=HG2 Q13A=HG3 Q4=HG6 Q12=HG12
Q6=HG18 Q8=HG20 Q10A=HG41 WEIGHT=H_WEIGHT)); SET QUEST6;
STUDY=6;
IF Q2M=99 THEN Q2M=.;
IF Q2D=99 THEN Q2D=.;
IF Q2Y=9999 THEN Q2Y=.;
Q2Y=Q2Y-1900;
BDATE=MDY(Q2M,Q2D,Q2Y);
PG3=FLOOR((DATE_COL-BDATE)/365.25);

IF Q18=1 THEN PG6=1;
ELSE IF Q24_6=1 THEN PG6=2;
ELSE IF Q24_5=1 THEN PG6=3;
ELSE IF Q24_2=1 OR Q24_3=1 THEN PG6=4;
ELSE IF Q24_4=1 THEN PG6=5;
ELSE IF Q24_1=1 THEN PG6=6;

IF Q9A NE 8 THEN HG1=Q9A;
ELSE HG1=.;
IF 1 LE Q13B1 LE 3 THEN DO;
IF Q13B2=1 THEN HG4=1;
ELSE IF Q13B2=2 THEN HG4=2;
ELSE IF Q13B2=3 OR Q13B2=4 THEN HG4=3; END;
ELSE IF 8 LE Q13B1 LE 9 THEN HG4=4;

IF Q7 NE 8 THEN HG19=Q7;
IF Q16A=1 OR Q16B=1 OR Q16C=1 OR Q16D=1 OR Q16E=1 OR Q16F=1 THEN HG23=1;
ELSE HG23=2;
IF Q4=1 AND Q4A NE 8 THEN HG25=Q4A;
ELSE IF Q4=2 THEN HG25=2;
IF Q15A=1 OR Q15B=1 OR Q15C=1 OR Q15D=1 OR Q15E=1 THEN HG27=1;
ELSE IF Q15A=8 AND Q15B=8 AND Q15C=8 AND Q15D=8 AND Q15E=8 THEN HG27=.;

```

```

ELSE HG27=2;

IF Q9B NE 8 THEN PG65=Q9B;
KEEP HOUSE_ID Q1 PG3 PG6 HG1 HG4 Q11A Q13A Q4 Q12 Q10A Q6 HG19 Q8 PG65
    HG23 HG25 HG27 STUDY WEIGHT PSU STRATUM COLLDATE;

PROC SORT; BY HOUSE_ID;

/* RECORD OF ACTIVITIES AND ENVIRONMENTS FOR STUDY 6 */
DATA SCREEN6; SET IN3.ENVIR;
STUDY=6;
IF SA2=1 THEN DO;
    IF SA2_1=1 OR SA2_1=3 THEN HX7=1;
    ELSE IF SA2_1=2 THEN HX7=2; END;
    IF SA2=2 THEN HX7=2;
IF SA2=1 THEN DO;
    IF SA2_1=2 OR SA2_1=3 THEN HX8=1;
    ELSE IF SA2_1=1 THEN HX8=2; END;
    IF SA2=2 THEN HX8=2;
IF SA3D=1 OR SA3B=1 THEN HX9=1;
    ELSE IF SA3D=2 AND SA3B=2 THEN HX9=2;
IF SA3A=1 THEN HX10=1;
    ELSE IF SA3A=2 THEN HX10=2;
IF S22H=1 THEN HX11=1;
    ELSE IF S22H=2 THEN HX11=2;
IF S22F=1 THEN HX12=1;
    ELSE IF S22F=2 THEN HX12=2;
IF SA3C=1 THEN HX13=1;
    ELSE IF SA3C=2 THEN HX13=2;
IF SA3E=1 THEN HX14=1;
    ELSE IF SA3E=2 THEN HX14=2;
IF SA3F=1 OR SA3G=1 THEN HX15=1;
    ELSE IF SA3F=2 AND SA3G=2 THEN HX15=2;
IF S22D=1 OR S22E=1 THEN HX16=1;
    ELSE IF S22D=2 AND S22E=2 THEN HX16=2;
IF S22G=1 THEN HX17=1;
    ELSE IF S22G=2 THEN HX17=2;
IF S22A=1 THEN HX22=1;
    ELSE IF S22A=2 THEN HX22=2;
IF S20=1 THEN PX7=1;
    ELSE IF S20=2 THEN PX7=2;
IF S21=1 THEN PX8=1;
    ELSE IF S21=2 THEN PX8=2;
IF S22C=1 THEN PX9=1;
    ELSE IF S22C=2 THEN PX9=2;
IF SB7_1=1 THEN HG24=1;
    ELSE IF SB7_1=2 THEN HG24=2;
IF SB7_5=1 THEN HG26=1;

```

```
ELSE IF SB7 5=2 THEN HG26=2;
IF SB7 8=1 THEN HG28=1;
ELSE IF SB7 8=2 THEN HG28=2;
IF SB7 9=1 THEN HG29=1;
ELSE IF SB7 9=2 THEN HG29=2;
IF SB7 12=1 THEN HG30=1;
ELSE IF SB7 12=2 THEN HG30=2;
IF SB6B=1 THEN HG31=1;
ELSE IF SB6B=2 THEN HG31=2;
IF SB6D=1 THEN HG32=1;
ELSE IF SB6D=2 THEN HG32=2;
IF SB6F=1 THEN HG33=1;
ELSE IF SB6F=2 THEN HG33=2;
IF SB6A=1 THEN HG34=1;
ELSE IF SB6A=2 THEN HG34=2;
IF SB6G=1 THEN HG36=1;
ELSE IF SB6G=2 THEN HG36=2;
IF SB5A LT 900 THEN HX38=SB5A;
IF SB5A LT 900 AND SB5B LT 90 AND SB5C LT 90
THEN HX39=SB5A+SB5B+SB5C;
IF HX39 GT 0 THEN HG40=1;
ELSE IF HX39=0 THEN HG40=2;
IF S4B GT 0 THEN PX40=S4B;
ELSE PX40=0;
IF S4A=1 THEN PX41=1;
ELSE IF S4A=2 THEN PX41=2;
IF S3A=1 THEN HG42=1;
ELSE IF S3A=2 THEN HG42=2;
IF S18A=1 OR S19A=1 THEN HX44=1;
ELSE IF S18A=2 AND S19A=2 THEN HX44=2;
IF S5=1 THEN PX47=1;
ELSE IF S5=2 THEN PX47=2;
IF S1A=1 THEN PX48=1;
ELSE IF S1A=2 THEN PX48=2;
IF S2A=1 THEN PX49=1;
ELSE IF S2A=2 THEN PX49=2;
IF S3B=1 THEN PX51=1;
ELSE PX51=2;
IF S7=1 THEN PX52=1;
ELSE IF S7=2 THEN PX52=2;
IF S9=1 THEN PX54=1;
ELSE IF S9=2 THEN PX54=2;
IF S8=1 THEN PX55=1;
ELSE IF S8=2 THEN PX55=2;
IF S11=1 THEN PX57=1;
ELSE IF S11=2 THEN PX57=2;
IF S12=1 THEN PX58=1;
ELSE IF S12=2 THEN PX58=2;
```



```

IF S13=1 THEN PX60=1;
  ELSE IF S13=2 THEN PX60=2;
IF S14=1 THEN PX61=1;
  ELSE IF S14=2 THEN PX61=2;
IF S15=1 THEN PX62=1;
  ELSE IF S15=2 THEN PX62=2;
IF S18A=1 THEN PX63=1;
  ELSE IF S18A=2 THEN PX63=2;
IF S6 NE 8 THEN PX66=S6;
PSU=INPUT(SEGNO, 2.);
KEEP HX7-HX17 HX22 PX7-PX9 HG24 HG26 HG28-HG34 HG36
     HX38 HX39 HG40 PX40 PX41 HG42 HX44 PX47-PX49 PX51 PX52 PX54
     PX55 PX57 PX58 PX60 PX61 PX62 PX63 PX66 PSU STRATUM WEIGHT
     HOUSE_ID STUDY;

```

```

PROC SORT; BY HOUSE_ID;

```

```

/* TIME AND ACTIVITY DIARY FOR STUDY 6 */
DATA DIARY1; SET IN5.DIARY;
IF DUR1+DUR4+DUR7 GT 1 THEN PX42=1;
  ELSE PX42=2;
PX43=ROUND(DUR1, .01);
PX44=ROUND(DUR4, .01);
PX45=ROUND(DUR7, .01);
PX73=ROUND(DUR1+DUR2, .01);
PX78=ROUND(DUR4+DUR5, .01);
PX79=ROUND(DUR3+DUR6, .01);
PX80=ROUND(DUR7+DUR8, .01);
KEEP HOUSE_ID PX42-PX45 PX73 PX78-PX80;

```

```

PROC SORT; BY HOUSE_ID;

```

```

DATA DIARY2; SET IN5.WDIARY;
PX74=ROUND(WORK1, .01);
PX75=ROUND(WORK2, .01);
PX76=ROUND(WORK3, .01);
PX77=ROUND(WORK4, .01);
KEEP HOUSE_ID PX74-PX77;

```

```

PROC SORT; BY HOUSE_ID;

```

```

DATA STUDY3; MERGE QUEST6 SCREEN6 DIARY1 DIARY2;
BY HOUSE_ID;

```

```

DATA STUDY3; SET STUDY3;
STUDY_ID=21*10000+STRATUM*1000+HOUSE_ID;
PART_ID=STUDY_ID*10+1;

```

```
PROC CONTENTS DATA=STUDY3;
```

```
DATA QUEST;  
  SET STUDY1 STUDY2 STUDY3;  
  DROP HOUSE_ID STUDY_ID;
```

```
PROC SORT OUT=IN4.QUEST; BY STUDY PART_ID;
```

```
PROC CONTENTS DATA=IN4.QUEST;
```